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Final

Site Management Plan
Fiscal Years 2006 through 2010

St. Juliens Creek Annex
Chesapeake, Virginia

Prepared for
Department of the Navy
Naval Facilities Engineering Command
Mid Atlantic

Under the
CLEAN III Program
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Acronyms and Abbreviations

ABM	abrasive blast media
AOC	Area of Concern
BERA	Baseline Ecological Risk Assessment
bgs	below ground surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLEAN	Comprehensive Long-Term Environmental Action—Navy
CY	cubic yards
DoD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
EE/CA	Engineering Evaluation/Cost Analysis
EPA	United States Environmental Protection Agency
FFA	Federal Facilities Agreement
FS	Feasibility Study
ft	feet, foot
FY	fiscal year
HRS	Hazard Ranking System
IAS	Initial Assessment Study
in.	inch, inches
IR	Installation Restoration
IRA	Interim Remedial Action
LUC	Land Use Control
MARMC	Mid-Atlantic Regional Maintenance Center
MCL	maximum contaminant level
MIP	membrane interface probe
NACIP	Navy Assessment and Control of Installation Pollutants
NAPEC	Naval Ammunition Production Engineering Center
NAVFAC	Naval Facilities Engineering Command
NFA	no further action
NPL	National Priorities List
NTCRA	Non-Time-Critical Removal Action
PA	Preliminary Assessment
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PRAP	Proposed Remedial Action Plan

RA	Remedial Action
RAB	Restoration Advisory Board
RACR	Remedial Action Completion Report
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RI	Remedial Investigation
ROD	Record of Decision
RRR	Relative Risk Ranking
SARA	Superfund Amendments and Reauthorization Act
SI	Site Investigation
SJCA	St. Juliens Creek Annex
SMP	Site Management Plan
SPAWAR	Space and Naval Warfare Systems Command
SSA	Site Screening Assessment
SWMU	Solid Waste Management Unit
TNT	trinitrotoluene
UTL	upper tolerance limit
UU/UE	unrestricted use and unlimited exposure
VDEQ	Virginia Department of Environmental Quality
VOC	volatile organic compound
VSI	visual site inspection

SECTION 1

Introduction

This document presents the Site Management Plan (SMP) for St. Juliens Creek Annex (SJCA) for fiscal years (FYs) 2006 through 2010. The SMP meets the requirements of the Federal Facilities Agreement (FFA) between the Naval Facilities Engineering Command (NAVFAC) Mid-Atlantic, Region III of the United States Environmental Protection Agency (EPA), and Virginia Department of Environmental Quality (VDEQ) under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to address environmental contamination at applicable SJCA sites.

1.1 Purpose

The purpose of the SMP is to provide a management tool for the SJCA Installation Restoration (IR) Partnering Team, which includes representatives from NAVFAC, SJCA, EPA, and VDEQ. The SMP is intended to be used in the planning, scheduling, and environmental remedial response activities to be conducted at SJCA. The SMP provides brief site descriptions, summaries of previous investigations, conceptual schedules, and proposed activities. The prioritization of activities and the conceptual schedules were developed by the SJCA IR Partnering Team and are based on several factors:

- The SJCA IR Partnering Team's relative ranking of the sites with regard to the potential risks that they may pose to human health and the environment (i.e., address high-risk sites first)
- NAVFAC's internal funding goal of having remedies in place at all "high–priority" sites by FY 2010
- Goals set by the SJCA IR Partnering Team to meet requirements of EPA, VDEQ, NAVFAC, SJCA, and the public

The SMP is a working document that is updated yearly to maintain current documentation and summaries of environmental actions at SJCA. This SMP updates and supercedes the FYs 2005 through 2009 SMP (CH2M HILL, August 2004).

1.2 Report Organization

This SMP consists of six sections. This section establishes the purpose of the SMP. Section 2 presents a brief description and environmental history of SJCA. Section 3 presents the history, description, and summary of investigations conducted at each active SJCA IR site. Section 4 provides the proposed activities and schedule for each site in FY 2006. Section 5 presents maps for land-use planning at SJCA. Section 6 lists references.

SECTION 2

SJCA Description and Environmental History

2.1 SJCA Description

St. Juliens Creek Annex is a 490-acre facility situated at the confluence of St. Juliens Creek and the Southern Branch of the Elizabeth River in the City of Chesapeake, in southeastern Virginia (Figure 2-1). The facility is bordered to the north by the Norfolk and Western Railroad, the City of Portsmouth, and residential areas; to the west by residential areas; to the south by St. Juliens Creek; and to the east by the Southern Branch of the Elizabeth River. Most surrounding areas are developed and include residences, schools, recreational areas, and shipping facilities for several large industries. The Norfolk Naval Shipyard is located approximately 1.5 miles north.

St. Juliens Creek Annex began operations as a naval ammunition facility in 1849. Past operations at SJCA have included general ordnance operations involving wartime transfer of ammunitions to various other Naval facilities throughout the United States and abroad. In addition, the Annex has been involved in specific ordnance operations and processes including those involving black powder operations, smokeless powder operations, projectile-loading operations, mine loading, tracer mixing, testing operations, and decontamination operations. Decontamination was performed in, around, and under ordnance-handling facilities at SJCA in 1977, after ordnance operations had ceased.

St. Juliens Creek Annex has also been involved in nonordnance operations, including degreasing, paint shops, machine shops, vehicle and locomotive maintenance shops, pest control shops, battery shops, print shops, electrical shops, boiler plant operations, wash rack operations, potable water and salt water fire-protection systems, fire-fighter training operations, and the storage of oil and chemicals.

Activity at SJCA has decreased in recent years and many of the aging structures are being demolished. The current primary mission of SJCA is to provide a radar-testing range and warehousing facilities for nearby Norfolk Naval Shipyard and other local Naval activities. St. Juliens Creek Annex also provides administrative offices, light industrial shops, storage facilities; including Defense Reutilization and Marketing Office (DRMO) storage, Space and Naval Warfare Systems Command (SPAWAR), Mid-Atlantic Regional Maintenance Center (MARMC), and a cryogenics school.

2.2 Environmental History

In 1975, the Department of Defense (DoD) began the Navy Assessment and Control of Installation Pollutants (NACIP) Program to assess past hazardous and toxic materials storage and disposal activities at military installations. The goals of this program were to identify environmental contamination resulting from past hazardous materials management practices, to assess the impacts of the contamination on public health and the environment, and to provide corrective measures as required to mitigate adverse impacts.

To meet the objectives of the NACIP Program, an Initial Assessment Study (IAS) was conducted at SJCA in 1981. Results of this study revealed that low-level concentrations of ordnance materials still existed at SJCA. Residues were also suspected from garbage burning at the Burning Grounds (Site 5) and near the swamp between Buildings 257 and 130 (Site 2), pesticide and herbicide rinsate disposal at Cross Street and Mine Road (Site 8), and ordnance waste and rinse waters to the sediments of Blows Creek. However, the sites identified were determined not to pose a threat to human health and the environment, and no confirmation study was recommended.

In 1976, the Resource Conservation and Recovery Act (RCRA) was passed by Congress to address potentially adverse human health and environmental impacts of hazardous waste management and disposal practices. RCRA was legislated to manage the present and future disposal of hazardous wastes.

The first step under the RCRA corrective action process, a RCRA Facility Assessment (RFA), was conducted at SJCA in 1989. The RFA included a preliminary review of all available relevant documents and a visual site inspection (VSI) that identified 34 Solid Waste Management Units (SWMUs) and 12 Areas of Concern (AOCs) (AOCs A through L). Fifteen SWMUs (4, 9, 13, 14, 15, 16, 17, 19, 20, 23, 25, 27, 32, 33, and 41) and eight AOCs (B, C, D, E, G, H, I, and J) were recommended for further action. Detailed subsurface investigations, such as RCRA Facility Investigations (RFIs), were recommended at 10 SWMUs (1, 2, 3, 4, 5, 6, 8, 24, 30, and 32) and AOC L.

In 1980, CERCLA, or "Superfund," was passed to investigate and remediate areas resulting from past hazardous waste management practices. This program is administered by EPA or state agencies.

In 1983, a Preliminary Assessment (PA), the first step in the CERCLA process (the CERCLA process is further discussed in Section 2.3 of this SMP) was conducted at SJCA. Ambient air at Sites 1, 2, 3, 4, 8, and 13 was monitored for volatile organic compounds (VOCs) and radiation with an organic vapor meter and radiation meter, respectively. No readings above background were encountered, and no significant signs of contamination were observed at the sites. However, the PA report mentioned that various locations on the facility were contaminated with low-level residues of pesticide and herbicide materials. A confirmation study was not proposed.

The NACIP Program was revised in 1986 to reflect the requirements of CERCLA as amended by the Superfund Amendments and Reauthorization Act (SARA). This revised program is referred to as the IR Program. The current IR Program is consistent with CERCLA and applicable state environmental laws.

To assess whether SJCA should be proposed for the National Priorities List (NPL), the EPA completed a Hazard Ranking System (HRS) evaluation in January 2000. St. Juliens Creek Annex was assigned a score of 50 based on the potential for surface water migration. Those facilities with HRS scores exceeding 28.5 are proposed for the NPL. Therefore, on February 3, 2000, EPA proposed that SJCA be added to the NPL. The proposed listing was followed by a minimum 60-day review and comment period prior to the inclusion of SJCA on the NPL on July 27, 2000.

Following the inclusion of SJCA on the NPL, the SJCA IR Partnering Team was chartered to streamline the clean-up of former disposal sites by using consensus-based site management strategies during the CERCLA process. The Team consists of representatives from NAVFAC, SJCA, EPA, VDEQ and CH2M HILL and meetings are held semiannually.

The FFA, negotiated between the Navy, EPA, and VDEQ was signed in July 2004. In accordance with the FFA, all past and future work at IR sites, SWMUs, and AOCs will be reviewed, and a course of action for future work requirements at each site will be developed. The FFA also includes specific requirements for the preparation and contents of the SMP.

2.3 CERCLA Process

The objectives of the CERCLA process are to evaluate the nature and extent of contamination at a site and to identify, develop, and implement appropriate remedial actions in order to protect human health and the environment. The major elements of the CERCLA process are:

- Preliminary Assessment (PA)/Site Investigation (SI)
- Remedial Investigation (RI)/Feasibility Study (FS)
- Engineering Evaluation/Cost Analysis (EE/CA) and Removal Action (may be implemented at any time in the CERCLA process)
- Proposed Remedial Action Plan (PRAP)/Record of Decision (ROD)
- Remedial Design (RD)/Remedial Action (RA)
- Community Involvement (implemented throughout the CERCLA process)

A brief description of each element is provided in the following subsections.

2.3.1 Preliminary Assessment/Site Investigation

The IR Program begins with the initiation of concerns about a site, area, or potential contaminant source. The PA is a limited-scope assessment designed to distinguish between sites that clearly pose little or no threat to human health or the environment and those that may pose a threat and require further investigation. This stage typically involves a review of historical documents and a VSI. If the PA results in a recommendation for further investigation, an SI is conducted to make a general determination if activities at the site have impacted environmental media and determine whether a site should be included in the CERCLA RI/FS process. An SI typically includes the collection of environmental samples to determine what hazardous substances are present at a site and to determine if they have been released to the environment.

2.3.2 Remedial Investigation/Feasibility Study

Based on the results of the PA/SI, an RI may be conducted. During the RI, environmental samples are usually collected from soil groundwater, surface water, and sediment. The results are used to characterize the nature and extent of contamination and assess risk to human health and the environment.

The FS is the mechanism for the development, screening, and detailed evaluation of alternative remedial actions to meet environmental standards and protect human health and

the environment. The RI and FS can be conducted concurrently; data collected in the RI influences the development of remedial alternatives in the FS, which in turn affect the data needs and scope of potential treatability studies and additional field investigations. This phased approach encourages the continual scoping of the site characterization effort, which minimizes the collection of unnecessary data and maximizes data

2.3.3 Engineering Evaluation/Cost Analysis and Removal Action

Removal actions are implemented to clean up or remove hazardous substances from the environment at a specific site in order to mitigate the spread of contamination. Actions taken immediately to mitigate an imminent threat to human health or the environment, such as the removal of corroded or leaking drums, are classified as Time-Critical Removal Actions. Removal actions that may be delayed for six months or more without significant additional harm to human health or the environment are classified as Non-Time-Critical Removal Actions (NTCRAs).

For a NTCRA, an EE/CA is prepared rather than the more extensive FS. An EE/CA focuses only on the substances to be removed rather than on all contaminated substances at the site. It is possible for a removal action to become the final remedial action if the risk assessment results indicate that no further remedial action is required in order to protect human health and the environment.

2.3.4 Proposed Remedial Action Plan/Record of Decision

A PRAP presents the remedial alternatives developed in the FS and recommends a preferred remedial method. The public has an opportunity to comment on the PRAP during an announced formal public comment period. Site information is compiled in an Administrative Record and placed in the Information Repository established at a local library for public review.

At the end of the public comment period, an appropriate remedial alternative is chosen to protect human health and the environment. All parties directly involved in the IR Program (Navy, EPA, VDEQ, and public) must agree on the selected alternative. The ROD document is then issued to explain the Selected Remedy. Any public comments received are addressed as part of the responsiveness summary in the ROD.

2.3.5 Remedial Design/Remedial Action

Subsequent to the ROD, RD/RA activities are initiated for the final site remedy. The technical specifications for clean-up remedies and technologies are designed in the RD phase. The RA phase is the actual construction or implementation of the clean-up process.

Five-year reviews are required by CERCLA when hazardous substances remain on-site above levels permitting unrestricted use and unlimited exposure (UU/UE). Five-year reviews provide an opportunity to evaluate the implementation and performance of a remedy to determine whether it remains protective of human health and the environment.

2.3.6 Community Involvement

To learn how the public would like to be involved in the CERCLA process, community interviews are conducted and a Community Involvement Plan, formerly known as a

Community Relations Plan, is developed based on the responses. An administrative record and information repository are also established and made available for review by the public.

For EE/CAs and PRAPs, the public is provided an opportunity to comment during an announced formal public comment period. During the public comment period for a PRAP, a public meeting is also held to provide supporting information. Comments received on the PRAP are documented in a responsiveness summary in the ROD. A public notice is issued after the ROD is signed and available for public inspection. A public notice is also published for any significant post-ROD changes.

A Community Relation Plan and a Restoration Advisory Board (RAB) has been established for SJCA. The RAB is comprised of members of the community, local environmental group members, and state and federal officials. RAB meetings are held semiannually to keep the community informed of environmental issues at SJCA. The documents prepared as part of the IR Program are maintained in the Administrative Record and listed at an Information Repository for review by the public. The Major Hillard Library is the information repository for SJCA.

Table 2-1
Site Status Summary Table
FY 2006 Site Management Plan
St. Juliens Creek Annex
Chesapeake, Virginia

Site ID	Name/Description	Other ID	Status	Comments	Documentation of Closure
Site 2	Waste Disposal Area B	Dump B; Dump B Incinerator; Dump B Blast Grit; RFA - SWMU 2, SWMU 3, SWMU 4	RI/FS	Final Site 2 RI completed February 2004 recommending Expanded RI to further investigate groundwater, sediment, and surface water; Phase II Expanded RI Report in progress to be submitted FY 2005.	
Site 3	Waste Disposal Area C	Dump C; Dump C Waste Disposal Pits; RFA - SWMU 5, SWMU 30	RI/FS	Final RI completed March 2003; Final EECA/Action Memorandum completed August 2002; Phase I Removal conducted September 2002; Phase II Removal conducted 2004; Final Construction Closeout Report completed March 2003; PRAP finalized January 2005; NFA ROD submitted for signature April 2005.	
Site 4	Landfill D	Dump D; Old Tanks at Dump D; RFA - SWMU 6, AOC L	RI/FS	Final RI completed March 2003; Final FS completed March 2004; PRAP finalized June 2004; ROD signed September 2004, RD submitted November 2004; RA began March 2005 and expected for completion October 2005.	
Site 5	Burning Grounds	RFA - SWMU 8	RI/FS	Final RI completed March 2003 recommending Expanded RI to further investigate surface soil and groundwater; Draft Expanded RI Report submitted November 2004 to be finalized in FY 2005.	
Site 19	Building 190	Residual Ordnance at Bldg. M-5 & 190 RFA - AOC H	Preliminary Screening Area (FFA Appendix B)	Final SI submitted in June 2004 recommending Supplemental SI to further investigate soil and groundwater; Draft Supplemental SI submitted in June 2005 recommending EE/CA for a soil hotspot NTCRA.	
Site 21	Building 187	None	Preliminary Screening Area (FFA Appendix B)	Final SI submitted in June 2004 recommending Supplemental SI to further investigate groundwater; Supplemental SI in progress FY 2005; report to be submitted FY 2006.	
Site 1	Waste Disposal Area A	Dump A; RFA - SWMU 1	NFA (FFA Appendix C)	Consensus for NFA by Navy, VDEQ, and EPA in November 2002 based on RRR data and September 2002 test pit information.	Consensus for NFA as documented in an Addendum to the SSA in January 2003.
Site 4	Dumpster Storage at Landfill D	Dumpster storage at Dump D; RFA - SWMU 7	NFA (FFA Appendix C)	RFA indicated that the dumpsters were no longer present.	Site 4 is currently being investigated under CERCLA.
Site 6	Small Items Pit	Caged Pit, RFA - SWMU 24	NFA (FFA Appendix C)	Final RI completed March 2003; Final EE/CA and Action Memorandum completed August 2002; Removal Action completed September 2002; Final Close-Out Report in March 2003; PRAP finalized July 2003; NFA ROD signed September 2003.	NFA Final ROD signed September 2003.
Site 7	Old Storage Yard	Old Storage Yard #1; RFA - SWMU 17	NFA (FFA Appendix C)	Consensus for NFA in July 2001 by Navy, VDEQ, and EPA pending debris removal. Debris removal was conducted FY 2002 and is documented in a construction removal document completed FY 2003.	July 2001 Tier I Partnering Meeting Minutes and documented in FFA.
Site 8	Cross and Mine	RFA - SWMU 9; FFA - PSA Site 8	NFA (FFA Appendix C)	Final SSA completed April 2002 recommending an SI to further investigate potential release to groundwater; Identified in the FFA as Preliminary Screening Area (FFA Appendix B) March 2004; Final SI completed June 2004 recommending NFA; Consensus for NFA by Navy, VDEQ, and EPA July 2004.	Signature Page in Final SI (June 2004).
Site 9	Pest. Control Bldg. 249	PA - SWMU 13	NFA (FFA Appendix C)	Removed/remediated during construction of SIMA facility.	Closed out during the construction of the SIMA building and documented in FFA.
Site 9	Oil Water Separator at Bldg. 249	RFA - SWMU 23	NFA (FFA Appendix C)	Removed/remediated during construction of SIMA facility.	Closed out during the construction of the SIMA building and documented in FFA.
Site 9	Washrack Bldg. 249	RFA - SWMU 25	NFA (FFA Appendix C)	Removed/remediated during construction of SIMA facility.	Closed out during the construction of the SIMA building and documented in FFA.
Site 10	Waste Disposal at Railroad Tracks	Hazardous Waste Disposal Area at Bldg. 13 (Railroad Tracks); RFA - SWMU 14	NFA (FFA Appendix C)	NFA consensus by Navy, VDEQ, and EPA during a site visit in July 2001.	Consensus for NFA as documented in the November 2002 SSA.
Site 10	Swale beneath Bldg. 13	RFA - SWMU 31	NFA (FFA Appendix C)	NFA consensus by Navy, VDEQ, and EPA during a site visit in July 2001.	Consensus for NFA as documented in the November 2002 SSA.
Site 11	Waste Disposal at Building 53 (formerly referenced to Bldg. 266)	RFA - SWMU 15	NFA (FFA Appendix C)	Consensus by Navy, VDEQ, and EPA for NFA during a site visit in July 2001 for Site 11 and groundwater underlying site will be investigated as part of Site 21.	Consensus for NFA as documented in the November 2002 SSA.
Site 12	Sand Blast Area Bldg. 323	RFA - SWMU 16	NFA (FFA Appendix C)	Removed/remediated during construction of SIMA facility.	Closed out during the construction of the SIMA building and documented in FFA.
Site 13	Waste Generation Area	RFA - SWMU 20	NFA (FFA Appendix C)	Removed/remediated during construction of SIMA facility.	Closed out during the construction of the SIMA building and documented in FFA.
Site 14	Washrack Bldg. 266	None	NFA (FFA Appendix C)	Removed/remediated during construction of SIMA facility.	Closed out during the construction of the SIMA building and documented in FFA.
Site 15	Fire Training Area	Fire Training Area at Bldg. 271; RFA - SWMU 27	NFA (FFA Appendix C)	Will be investigated under the Navy's Underground Storage Tank (UST) program and therefore, NFA under CERCLA consensus by Navy, VDEQ, and EPA in July 2002.	July 2002 Tier I Partnering Meeting Minutes and documented in FFA.
Site 16	DRMO Storage/Salvage Yard	RFA - SWMU 28	NFA (FFA Appendix C)	While active, the DRMO does not fall under CERCLA and therefore, NFA under CERCLA consensus by Navy, VDEQ, and EPA in July 2002. Regional inspections are conducted for stormwater management.	July 2002 Tier I Partnering Meeting Minutes and documented in FFA.
Site 17	Storage Pad at Building 279	Satellite storage at Bldg. 279; RFA - AOC A	NFA (FFA Appendix C)	The roof and walls of Building 278/279 were demolished in early 2003, the flooring and concrete pilings are still in place awaiting final removal. Based upon the proximity to Site 2, consensus in February 2003 by Navy, VDEQ, and EPA that further action related to Site 17 will be addressed as part of Site 2.	February 2003 Tier I Partnering Meeting Minutes and documented in FFA.
Site 18	Blasting Grit at Building 47	RFA - AOC C	NFA (FFA Appendix C)	During the July 2001 SJCA Partnering Team site visit, no blast grit was observed in several hand auger borings therefore, consensus for NFA was reached by Navy, VDEQ, and EPA.	Consensus for NFA as documented in the November 2002 SSA.
Site 18	Air Compressor at Bldg. 47	RFA - AOC B	NFA (FFA Appendix C)	NFA consensus by Navy, VDEQ, and EPA in July 2002. Regional inspections are conducted for stormwater management.	July 2002 Tier I Partnering Meeting Minutes and documented in FFA.
Site 20	Wharf Area Sediments	Residual Ordnance at wharf area; RFA - AOC I	NFA (FFA Appendix C)	Navy Range Program will manage the site. Due to the potential for buried ordnance, signs were posted in 2003 to prohibit intrusive activities, the Navy will place a warning notice in LANTDIV Real Estate Documents, and notify the U.S. Army Corps of Engineers of the potential for UXO. During the July 2001 site visit, the Navy, VDEQ and EPA reached consensus for NFA under CERCLA.	Consensus for NFA as documented in the November 2002 SSA.
SWMU 10	Hazardous Waste Container Storage Bldg. 254Y	None	NFA (FFA Appendix C)	Recommended for NFA in the RFA as SWMU 10 was assigned to RCRA Program as a >90 day storage bunker. Consensus by Navy, VDEQ, and EPA for NFA under CERCLA in July 2002, as SWMU 10 was managed under RCRA.	July 2002 Tier I Partnering Meeting Minutes and documented in FFA.
SWMU 11	Hazardous Waste Container Storage Bldg. 163Y	None	NFA (FFA Appendix C)	Recommended for NFA in the RFA as SWMU 11 was assigned to RCRA Program as a >90 day storage bunker. Consensus by Navy, VDEQ, and EPA for NFA under CERCLA in July 2002, as SWMU 11 is managed under the Virginia Hazardous Waste Management Regulations (VHWMR).	July 2002 Tier I Partnering Meeting Minutes and documented in FFA.
SWMU 12	PCB Storage Bldg. 198	None	NFA (FFA Appendix C)	Recommended for NFA in the RFA. SWMU 12 is a current storage facility managed under Toxic Substances Control Act (TSCA) therefore, consensus by Navy, VDEQ, and EPA for NFA under CERCLA in July 2002.	July 2002 Tier I Partnering Meeting Minutes and documented in FFA.
SWMU 18	Old Storage Yard # 2	None	NFA (FFA Appendix C)	Recommended for NFA in the RFA. Currently in operation and Regional inspections are conducted for stormwater management. Consensus by Navy, VDEQ, and EPA for NFA under CERCLA.	FFA
SWMU 19	Old Storage Yard # 3	None	NFA (FFA Appendix C)	RFA recommended action for better management practice. A site visit was performed in November 2002 by Navy, VDEQ, and EPA to confirm status and consensus for NFA under CERCLA was reached.	FFA
SWMU 21	Hazardous Waste Accumulation Area (SIMA # 2)	None	NFA (FFA Appendix C)	The RFA recommended NFA for this SWMU. A site visit was performed in November 2002 by Navy, VDEQ, and EPA to confirm status and consensus for NFA under CERCLA was reached. The Navy submitted a closure notification letter to VDEQ for SWMU 21.	Closure letter submitted to VDEQ and documented in FFA.
SWMU 22	Repair Shop Satellite Storage Area NE of Bldg. 40	None	NFA (FFA Appendix C)	The RFA recommended NFA for this SWMU. A site visit was performed in November 2002 by Navy, VDEQ, and EPA to confirm status and consensus for NFA under CERCLA was reached. The Navy submitted a closure notification letter to VDEQ for SWMU 22.	Closure letter submitted to VDEQ and documented in FFA.
SWMU 26	Scrap Metal Storage in Railroad Cars near Bldg. 176	None	NFA (FFA Appendix C)	Based on a site visit in November 2002, NFA consensus was reached by Navy, VDEQ, and EPA, as the SWMU is managed under RCRA.	FFA

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Site ID	Name/Description	Other ID	Status	Comments	Documentation of Closure
SWMU 29	Dumpsters (throughout the facility)	None	NFA (FFA Appendix C)	Based on a site visit in November 2002, NFA consensus was reached by Navy, VDEQ, and EPA, as the SWMU is managed under RCRA.	FFA
SWMU 32	Overland Drainage Ditches	None	NFA (FFA Appendix C)	Navy, VDEQ, and EPA reached consensus for NFA under CERCLA, as drainage ditches associated with individual sites, AOCs, or SWMUs will be investigated on a site-specific basis. Site-specific investigations will identify the exact boundaries of the drainage ditch and samples will be collected at all locations where there is either visible evidence of release or suspicion that past releases may have occurred.	FFA
SWMU 33	Sewer Drainage System	None	NFA (FFA Appendix C)	Navy, VDEQ, and EPA reached consensus for NFA under CERCLA, as the sewer drainage system associated with individual sites, AOCs, or SWMUs will be investigated on a site-specific basis. Site-specific investigations will include evaluating the integrity of the subsurface system and may include soil sampling to determine if hazardous constituents have been released.	FFA
SWMU 34	Operational Waste Accumulation Areas	None	NFA (FFA Appendix C)	Based on a site visit in November 2002, NFA consensus was reached by Navy, VDEQ, and EPA, as the SWMU is managed under RCRA.	FFA
AOC D	Storm Water Outfalls	None	NFA (FFA Appendix C)	Navy, VDEQ, and EPA reached consensus for NFA under CERCLA, as the storm water outfalls will be investigated under CERCLA on a site-specific basis. Site-specific investigations may include sampling various outfalls to determine whether there has been a release of hazardous constituents.	FFA
AOC E	Temporary Pump Storage	None	NFA (FFA Appendix C)	AOC E was remediated during a removal action conducted as part of the SIMA facility construction. Therefore, the SJCA Partnering Team reached consensus for NFA for AOC E based on the removal action.	Closed out during the construction of the SIMA building and documented in FFA.
AOC F	Underground Storage Tanks	None	NFA (FFA Appendix C)	Navy, VDEQ, and EPA reached consensus for NFA under CERCLA in July 2002, as AOC F is managed under the Navy's UST Program.	July 2002 Tier I Partnering Meeting Minutes and documented in FFA.
AOC G	Former Process Buildings	None	NFA (FFA Appendix C)	Navy, VDEQ, and EPA reached consensus for NFA under CERCLA in July 2002 however, as new information becomes available on the locations and processes conducted at former process buildings, the SJCA Partnering Team will determine if new AOCs should be added. Any former process buildings identified for further evaluation will be evaluated on a site-specific basis.	July 2002 Tier I Partnering Meeting Minutes and documented in FFA.
AOC J	Former Ammunition Manufacturing Areas	None	NFA (FFA Appendix C)	Navy, VDEQ, and EPA reached consensus for NFA under CERCLA, however, as new information becomes available on the manufacturing areas, the SJCA Partnering Team will determine if new AOCs should be added. Any former ammunition manufacturing areas identified for further evaluation will be evaluated on a site-specific basis.	FFA
AOC K	Former Sewage Treatment Plant	FFA - SSA AOC K	NFA (FFA Appendix C)	Identified in the FFA as Site Screening Area (FFA Appendix A) March 2004; Final SSA completed June 2004 recommending NFA; Consensus for NFA by Navy, VDEQ, and EPA July 2004.	Signature Page in Final SSA Addendum (June 2004).
EPIC AOC 1	E Street and Marsh Road Ground Scarring	AOC 1; FFA - PSA AOC 1	NFA (FFA Appendix C)	Final SSA completed April 2002 recommending an SI to further investigate soil; Identified in the FFA as Preliminary Screening Area (FFA Appendix B) March 2004; Final SI completed June 2004 recommending NFA; Consensus for NFA by Navy, VDEQ, and EPA July 2004.	Signature Page in Final SI (June 2004).
EPIC AOC 2	Piers in front of Building 83	AOC 2	NFA (FFA Appendix C)	NFA consensus by Navy, VDEQ, and EPA during a site visit in July 2001.	Consensus for NFA as documented in the November 2002 SSA.
EPIC AOC 3	Ground Scarring at Building M5	AOC 3	NFA (FFA Appendix C)	NFA consensus by Navy, VDEQ, and EPA during a site visit in July 2001.	Consensus for NFA as documented in the November 2002 SSA.
EPIC AOC 4	Parking Area South of Building M-1	AOC 4	NFA (FFA Appendix C)	NFA consensus by Navy, VDEQ, and EPA during a site visit in July 2001.	Consensus for NFA as documented in the November 2002 SSA.
EPIC AOC 5	Possible Soil Staining Between Buildings 87 and 88	AOC 5	NFA (FFA Appendix C)	NFA consensus by Navy, VDEQ, and EPA during a site visit in July 2001.	Consensus for NFA as documented in the November 2002 SSA.
EPIC AOC 6	Ground Scarring East of Site 2	AOC 6	NFA (FFA Appendix C)	NFA consensus by Navy, VDEQ, and EPA during a site visit in July 2001.	Consensus for NFA as documented in the November 2002 SSA.
EPIC AOC 7	City of Portsmouth Outgrant Area	AOC 7	NFA (FFA Appendix C)	NFA consensus by Navy, VDEQ, and EPA during a site visit in July 2001.	Consensus for NFA as documented in the November 2002 SSA.
EPIC AOC 8	Possible Waste Disposal/Bulk Storage Area	AOC 8	NFA (FFA Appendix C)	NFA consensus by Navy, VDEQ, and EPA during a site visit in July 2001.	Consensus for NFA as documented in the November 2002 SSA.
EPIC AOC 9	Ground Scarring Southwest of Building 74	AOC 9	NFA (FFA Appendix C)	NFA consensus by Navy, VDEQ, and EPA during a site visit in July 2001.	Consensus for NFA as documented in the November 2002 SSA.
EPIC AOC 10	Ground Scarring in Wharf Area	AOC 10	NFA (FFA Appendix C)	NFA consensus by Navy, VDEQ, and EPA during a site visit in July 2001.	Consensus for NFA as documented in the November 2002 SSA.
EPIC AOC 11	Open Storage Area Northeast of Building 55	AOC 11	NFA (FFA Appendix C)	NFA consensus by Navy, VDEQ, and EPA during a site visit in July 2001.	Consensus for NFA as documented in the November 2002 SSA.
EPIC AOC 12	Sandy Flat	AOC 12	NFA (FFA Appendix C)	NFA consensus by Navy, VDEQ, and EPA during a site visit in July 2001.	Consensus for NFA as documented in the November 2002 SSA.
AOC 13	PCP Dip Tank	AOC 13; FFA - SSA AOC 13	NFA (FFA Appendix C)	Identified in the FFA as Site Screening Area (FFA Appendix A) March 2004; Final SSA completed June 2004 recommending NFA; Consensus for NFA by Navy, VDEQ, and EPA July 2004.	Signature Page in Final SSA Addendum (June 2004).
AOC 14	Building 89	AOC 14; FFA - SSA AOC 14	NFA (FFA Appendix C)	Identified in the FFA as Site Screening Area (FFA Appendix A) March 2004; Final SSA completed June 2004 recommending NFA; Consensus for NFA by Navy, VDEQ, and EPA July 2004.	Signature Page in Final SSA Addendum (June 2004).

Table 2-2
Environmental Studies, Investigations, and
Actions Completed To-Date at Active IR Sites
FY 2006 Site Management Plan
St. Juliens Creek Annex
Chesapeake, Virginia

IR Site	Preliminary Studies			Preliminary Investigations	RI	FS	EE/CA	Removal Actions	PRAP/ROD	RD/RA
	IAS (1981)	PA (1983)	RFA (1989)							
CERCLA RI/FS Process Sites										
Site 2	X	X	X	RRR - 1996	2003 Expanded RI - 2005					
Site 3	X	X	X	RRR - 1996	2003		2002	2002 and 2004	2005	
Site 4	X	X	X	RRR - 1996	2003	2004			2005	2005
Site 5	X		X	RRR - 1996	2003 Expanded RI - 2004					
Preliminary Screening Areas										
Site 19	X		X	RRR - 1996 SSA - 2002 SI - 2004 Supplemental SI - 2005						
Site 21	X		X	RRR - 1996 SSA - 2002 SI - 2004 Supplemental SI - 2005						

EE/CA - Engineering Evaluation/Cost Analysis
FS - Feasibility Study
IAS - Initial Assessment Study
IR - Installation Restoration
PA - Preliminary Assessment
PRAP - Proposed Remedial Action Plan
RA - Remedial Action
RD - Remedial Design
RFA - RCRA Facility Assessment
RI - Remedial Investigation
ROD - Record of Decision
RRR - Relative Risk Ranking
SI - Site Investigation
SSA - Site Screening Assessment

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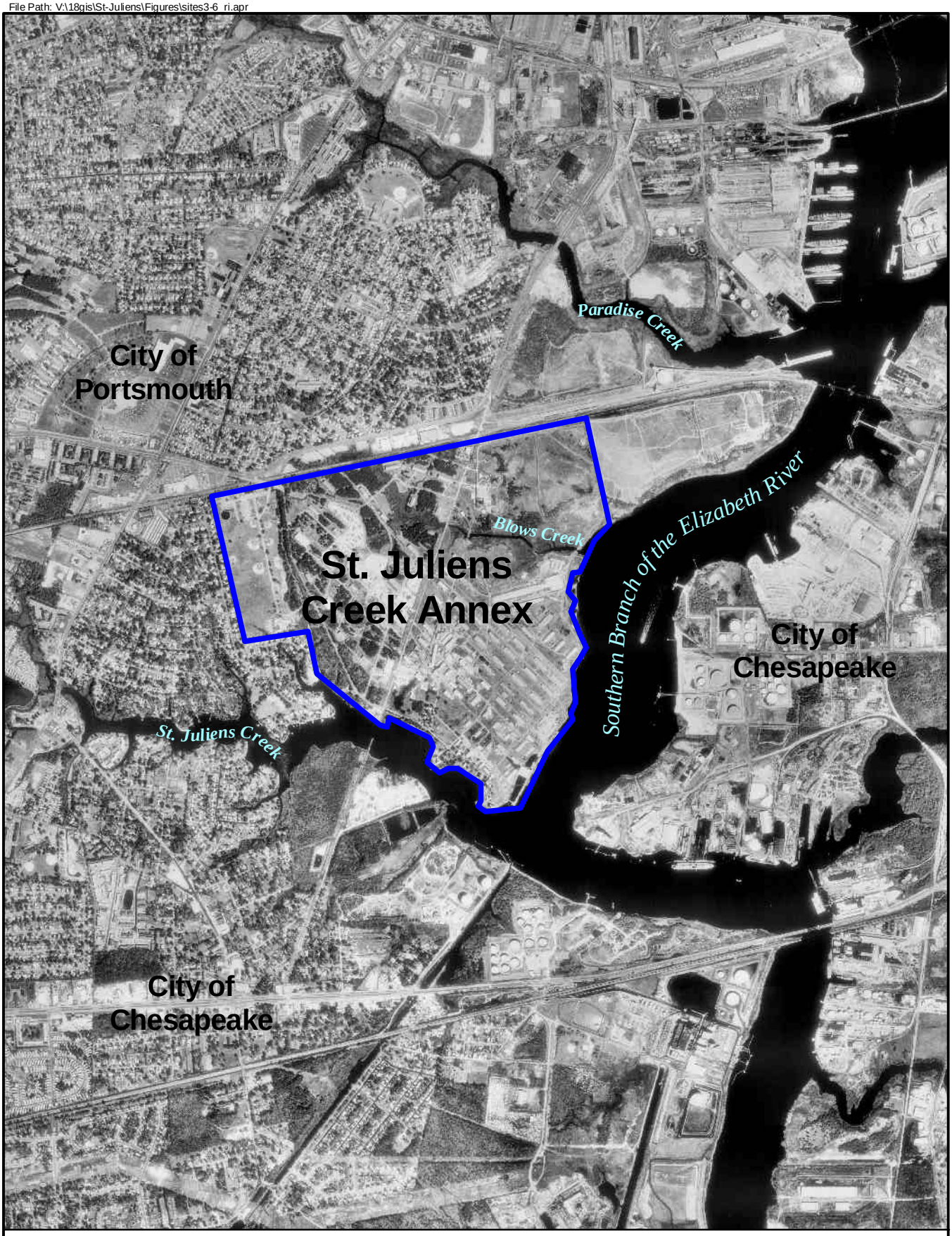

LEGEND

St. Juliens Creek Annex

N

0 1000 2000 3000 Feet

Figure 2-1
Location of St. Juliens Creek Annex
St. Juliens Creek Annex
Chesapeake, Virginia

SECTION 3

Site Descriptions

A total of 58 potentially contaminated sites, SWMUs, and AOCs have been identified for evaluation at SJCA based on the previous assessments and investigations. Table 3-1 lists the status of each site. The following subsections present a brief site history, site description, and summary of the site-specific investigations conducted at each active SJCA IR site. The site histories were primarily based on the previous facility-wide investigations completed through the IR Program to-date, including:

- IAS – NEESA, August 1981
- PA – NUS Corporation, 1983
- Phase II RFA – A.T. Kearney, March 1989
- Relative Risk Ranking (RRR) System Data Collection Report – CH2M HILL, April 1996
- Aerial Photographic Site Analysis – EPA Region III, February 1995
- HRS Documentation Record – Tetra Tech, January 2000
- Basewide Background Investigation – CH2M HILL, October 2000 and August 2004
- Site Screening Assessment (SSA) – CH2M HILL, April 2002

3.1 Sites in the CERCLA RI/FS Process

The following sites have been identified in the FFA as requiring an RI/FS under CERCLA. The ultimate closure of each of these sites will be documented in a ROD. Locations of each site in the CERCLA RI/FS process are shown on Figure 3-1. Table 3-2 provides a summary of the studies conducted at each site.

3.1.1 Site 2—Waste Disposal Area B

Site 2 is a former waste disposal area covering approximately 4.4 acres at the corner of St. Juliens Drive and Cradock Street, in the southwestern portion of SJCA. In earlier documents, Site 2 was referred to as Dump B, Landfill B, and/or SWMUs 2, 3, and 4. The waste disposal area began operating in 1921. Initially, refuse was burned on-site and used to fill an adjacent swampy area. Mixed municipal wastes, organics, inorganics, solvents, waste ordnance, and abrasive blast media (ABM) from ship overhaul and repair operations were reportedly disposed of at Site 2. The total volume of waste prior to burning is reported to have been approximately 35,185 cubic yards (CY), and it is estimated that half of this waste was disposed of prior to 1942, when an incinerator was installed to replace the open-burning practices. The waste disposal area was closed sometime after 1947.

During the 1981 IAS, a drum of Pen-Strip-G (penetone) was identified in the washrack at Building 249, just north of Site 2. The IAS states that penetone was used for vehicle and equipment cleaning in the washrack and the wastewater drained to the sanitary sewer, but prior to 1976 the effluent drained to the swampy area (Site 2 inlet), which drained into St. Juliens Creek. In 1989, the site was used for storing heavy equipment and machinery, including tools, tires, and machinery in sheds and trailers.

In the center of Site 2 is a water body surrounded by brush, trees, and grass directly connected to St. Juliens Creek. This inlet is tidally influenced and drains surface water from adjoining land into the creek. The Site 2 topography is generally level, sloping towards the inlet and St. Juliens Creek. Groundwater flow follows the topography and flows towards the inlet and creek. Construction debris (concrete and brick) as well as ABM is visible on the ground surface. Site 2 is bounded on the north by a parking lot and former Site 17; on the east by a grass-covered field where Building 130 once stood; on the west by a stormwater drainage ditch and Cradock Street; and on the south by St. Juliens Road and St. Juliens Creek.

Two to 3 feet (ft) deep vegetated drainage ditches are located along Cradock Street. An underground storm drainage system also originates approximately 1,000 ft northeast of the Site 2 area and outlets through a culvert to the inlet. Surface runoff from an adjacent parking lot to the northwest of the inlet also drains directly into the inlet.

Remedial Investigation/Human Health Risk Assessment/Ecological Risk Assessment – 1997 through 2004

The RI field activities at Site 2 began in 1997 and continued through 2004. Activities included a geophysical investigation; monitoring well installation; water-level monitoring, and the collection and analysis of surface and subsurface soil, groundwater, sediment, and surface water samples. Based on the waste delineation trenching results and historical aerial photograph reviews, it was determined that Site 2 had not been operated as a cut-and-fill landfill. Therefore, Site 2 was reclassified as a waste disposal area and the site boundary was adjusted to reflect the extent of waste.

The human health and ecological risk assessments conducted as part of the RI concluded that there is potential risk to human and ecological receptors from exposure to chemicals in soil and sediment (primarily inorganics, pesticides, and polycyclic aromatic hydrocarbons [PAHs]). Elevated concentrations of VOCs were present in the surface water but because surface water is transient, there was no significant risk to human health or the environment identified. No human health risk drivers were identified in shallow or deep groundwater.

The RI recommended further evaluation of the potential for adverse effects to aquatic life in the inlet sediment, investigation of the potential source of VOCs to surface water, and additional investigation of shallow groundwater because most of the shallow monitoring wells were found to be located upgradient of historical Site 2 activities.

Expanded Remedial Investigation/Human Health Risk Assessment/Ecological Risk Assessment – 2004 to Present

Based on the results of the Site 2 RI and data gaps identified, an Expanded RI was conducted from December 2003 through January 2004. Field activities included monitoring well installation and groundwater sampling to further define the nature and extent of shallow groundwater contamination, stormwater and surface water sampling to assess the source of VOC contamination in inlet surface water, and sediment sampling in St. Juliens Creek to evaluate potential impacts from the Site 2 inlet.

Significant detections of VOCs were found in groundwater samples collected from the shallow monitoring wells at Site 2. Additionally, the elevated VOCs in groundwater at Site 2

and the stormwater system from an upgradient VOC plume at Site 21 are impacting the inlet surface water. The sediment sample results indicate that although Site 2 is potentially contributing, or has historically contributed, chemicals to St. Juliens Creek via tidal flux, significant site-related effects are only reflected in a localized area directly at the outfall location.

As a result of these findings, the SJCA IR Partnering Team concluded that further delineation of the nature and extent of groundwater contamination and further characterization of ecological risks in inlet sediment, were necessary. Therefore, Phase II of the Expanded RI was conducted in October and November 2004 and included waste delineation under the parking lot area; further delineation of VOCs in groundwater, including membrane interface probe (MIP) investigation and shallow and deep monitoring well installation, and groundwater sampling; and inlet sediment sampling to characterize the toxicity to benthic-dwelling organisms, further evaluate the low level risks that were indicated to avian piscivores from the presence of mercury, and assess if VOC-contaminated groundwater is discharging to the inlet. The results and recommendations for next steps will be incorporated into an Expanded RI Report for Site 2 in FY 2005.

3.1.2 Site 3—Waste Disposal Area C

Site 3 is a former waste disposal area that covers approximately 2.1 acres in the northeastern corner of SJCA. In earlier documents, Site 3 was referred to as Dump C, Waste Disposal Pits, Landfill C, SWMU 5, and/or SWMU 30 and was reported to consist of approximately 10 acres. Review of historical aerial photographs indicate that prior to use as a disposal area, the site and much of the adjacent area had been used for placement of dredge spoil material that reportedly originated from Blows Creek and the Southern Branch of the Elizabeth River.

Site 3 was originally a mudflat where refuse was allowed to burn; the ash was then used to fill the area. Operations began in 1940 and continued until 1970, prior to the implementation of RCRA. Refuse disposed of at Site 3 reportedly included solvents, acids, bases, and mixed municipal waste in addition to trichloroethylene waste oil and oil sludges. Two pits, located along the north side of the dirt road that crosses the site diagonally, were reportedly used for disposal of oil and oily sludge as well as for periodic burning. Prior to burning, the total volume of waste disposed of was estimated to be 27,778 CY. Refuse was burned and extinguished daily with water from a fire hose. Salvageable materials were removed from the site daily and every two weeks the site was bulldozed for compaction and leveling. After 1970, the area was graded level and covered with grass.

The Site 3 topography is generally level, sloping towards Blows Creek. Groundwater flow follows the topography and flows towards Blows Creek and the Southern Branch of the Elizabeth River. Two to three ft deep vegetated drainage ditches are located along the perimeters of the site and discharge surface water runoff to Blows Creek.

Remedial Investigation/Human Health Risk Assessment/Ecological Risk Assessment – 1997 through 2003

The RI field activities at Site 3 began in 1997 and continued through 2003. Activities included a geophysical investigation; monitoring well installation; water-level monitoring; and the collection and analysis of surface and subsurface soil samples, groundwater samples, drainage sediment samples, and drainage surface water samples. Waste debris and

burnt/stained soils were visually identified within 30 inches (in.) of the ground surface at Site 3. The debris area was confined along the access road, which transects Site 3, with most debris located on the north side of the road. Burned or stained soil was limited to the north side of the gravel access road. Based on the waste delineation activities and interviews with former SJCA employees, it was determined that Site 3 had not been operated as a cut-and-fill landfill and the extent of waste was substantially smaller than previously reported. Therefore, Site 3 was reclassified as a waste disposal area and the site boundary was adjusted to reflect the extent of waste.

The human health and ecological risk assessments conducted as part of the RI concluded that there was potential risk to human and ecological receptors from exposure to chemicals in soil and upland drainage ditch sediment (primarily inorganics and PAHs). Because surface water is transient at the site and the upland ditches provide minimal ecological habitat, there was no significant risk to human health and the environment identified from direct exposure to the drainage surface water. No human health risk drivers were identified for the shallow Columbia Aquifer groundwater. Although human health risk drivers (primarily inorganics) were identified for the deeper Yorktown Aquifer, the SJCA IR Partnering Team determined the risks to be acceptable based on the concentrations of compounds, the risks identified with these compounds, and the nature of the groundwater flow conditions.

The RI recommended a removal action for Site 3; including waste, soil, and upland drainage ditch sediment/soil; to mitigate risks and eliminate concern for continued transport of potential contaminants to Blows Creek via the site-related drainage ditches. Further evaluation of the potential for adverse effects to aquatic life in Blows Creek sediment was also recommended based on chemical concentrations of inorganics and pesticides in upland drainage ditch sediment/soil. A separate Baseline Ecological Risk Assessment (BERA) for Blows Creek is currently being conducted to identify potential risk associated with possible historical contributions to Blows Creek from upland Navy IR Program sites, including Site 3.

Engineering Evaluation/Cost Analysis and Action Memorandum – 2002

Based on the findings of the RI, an EE/CA was conducted to identify and analyze remedies or removal actions to mitigate potential risk at Site 3. Three alternatives were identified, evaluated, and ranked. Based on a comparative analysis of the alternatives, the selected NTCRA involved excavation, disposal characterization, and disposal of waste, soil, and upland drainage ditch sediment/soil from Site 3. The volume of the material and soil to be removed was estimated to be 9,204 CY and confirmatory samples were to be collected from the remaining soils at the sides and bottom of the excavated areas to verify that clean-up goals were met.

A public notice of availability of the Draft EE/CA was issued on April 26, 2002 and was made available to the public for comment from May 1 to May 30, 2002. No comments were received. Therefore, the Navy signed an Action Memorandum on August 5, 2002 to implement the NTCRA as specified in the EE/CA.

Removal Action – 2002 through 2004

The NTCRA activities at Site 3 were conducted in two phases. Phase I was conducted from August through September 2002. During Phase I, approximately 3,300 CY of waste and soil were removed from the northern portion of Site 3. The limits of excavation were determined

based on achieving soil field screening results below background upper tolerance limits (UTLs) for dredge fill soil followed by off-site laboratory confirmation analyses.

In February 2003, a waste delineation investigation was conducted to delineate the remaining waste, soil, and upland drainage ditch sediment/soil requiring excavation at Site 3 by obtaining confirmation samples. Subsequently, the Phase II removal was conducted from October 2003 through March 2004. Approximately 9,497 CY of waste, soil, and upland drainage ditch sediment/soil were removed based on the confirmatory sample results.

The Confirmation Closeout Report, completed in August 2004, summarizes the confirmation sample results from the NTCRAs conducted at Site 3. The confirmation sample results show that the average concentrations for all compounds of potential concern were below background UTLs for dredge fill soil, and the central-tendency population-to-population comparisons indicated no statistical difference between site and background data. Therefore, the potential risk to human and ecological receptors posed by Site 3 has been mitigated by the removal actions conducted. Based upon the complete removal of waste, soil (including the area of the former disposal pits), and upland drainage ditch sediment/soil that posed a potential risk at Site 3, the SJCA IR Partnering Team (Navy, EPA, and VDEQ) reached consensus no further action (NFA) at Site 3.

Proposed Remedial Action Plan and Record of Decision – 2004 to Present

The PRAP for Site 3 identified NFA as the preferred alternative. A public notice of the meeting and availability of the PRAP was issued on November 5, 2004. The Navy provided a public comment period from November 13 through December 27, 2004. The public meeting to present the PRAP for Site 3 was held on December 7, 2004 at the Major Hillard Library. No members of the public attended the public meeting and no comments were received during the public comment period. The Final NFA ROD for Site 3 was submitted in April 2005 and is pending signature in FY 2005.

3.1.3 Site 4—Landfill D

Site 4 is a 10.1–acre landfill in the northeastern portion of SJCA located at the confluence of Blows Creek and the Southern Branch of the Elizabeth River. The site consists of an 8.2-acre landfill and a 1.9-acre wetland area and is located on dredge fill material that reportedly originated from Blows Creek and the Southern Branch of the Elizabeth River. In earlier documents, Site 4 was referred to as Dump D or SWMU 6 and included SWMU 7 and AOC L and was reported to consist of only 5 acres.

The first indication of activity at Site 4 is a trench identified on a historical aerial photograph from 1961. The trench was approximately 1,000 ft long and was located parallel to and about 500 ft north of Blows Creek. The original trench and others were filled with trash, wet garbage, and soil from subsequent trenches. It is not known how many trenches were eventually dug, but based on a review of historical aerial photographs, there appears to have been only two trenches. The IAS indicated that around 1970, sanitary landfill operations began at Site 4 in the marshes of Blows Creek. Disposal included primarily trash and wet garbage. Sanitary landfill operations continued until 1976, at which time trash and garbage were hauled to an off-site facility and inert construction material was then disposed of at the landfill. The RFA indicates that refuse disposal continued until 1981. The wastes managed were primarily trash, wet garbage, construction material, and outdated civil

defense stores. Although the RFA indicated that some solvents, acids, bases, and polychlorinated biphenyls (PCBs) were disposed of at Site 4, it is assumed that these materials were disposed of prior to 1976 because the IAS states that only inert material was disposed of after that date. Wastes disposed of at Site 4 were estimated at 1.5 million cubic ft. Sample results from the RI do not indicate the presence of chlorinated solvents or hazardous materials in soil or groundwater at Site 4. Based on the findings of the RI and historic disposal dates, Site 4 does not require closure as a hazardous waste landfill.

Remedial Investigation/Human Health Risk Assessment/Ecological Risk Assessment – 1997 through 2003

The RI field activities at Site 4 began in 1997 and continued through 2003. Activities included a geophysical investigation; monitoring well installation; water-level monitoring; and the collection and analysis of surface and subsurface soil samples, groundwater samples, sediment samples, and surface water samples. Based on a review of historical aerial photographs and site reconnaissance, it was determined that the extent of waste was greater than previously reported, extending west from the original site boundary. Therefore, the Site 4 boundary was adjusted to reflect the extent of waste.

The human health and ecological risk assessments conducted as part of the RI concluded that there was potential risk to human and ecological receptors from exposure to chemicals in soil (primarily inorganics and PAHs) and elevated mercury concentrations in the adjacent drainage ditch. Because surface water is transient and the upland ditches provide minimal ecological habitat, there was no significant risk to human health and the environment identified from direct exposure to surface water. No human health risk drivers were identified for the shallow Columbia Aquifer groundwater. Although human health risk drivers (primarily inorganics) were identified for the deeper Yorktown Aquifer, the SJCA IR Partnering Team determined the risks to be acceptable based on the concentrations of compounds, the risks identified with these compounds, and the nature of the groundwater flow conditions.

The RI recommended an FS be prepared to evaluate remedial alternatives to mitigate risks from Site 4 and eliminate concern for continued transport of potential contaminants to Blows Creek via the site-related drainage ditches. Further evaluation of the potential for adverse effects to aquatic life in Blows Creek sediment was also recommended based on chemical concentrations of inorganics and pesticides in upland drainage ditch sediment/soil. A separate BERA for Blows Creek is currently being conducted to identify potential risk associated with possible historical contributions to Blows Creek from upland Navy IR Program sites, including Site 4.

Feasibility Study - 2004

As part of the FS for Site 4, remedial alternatives were evaluated to minimize contact of human and ecological receptors with landfill contents, reduce infiltration and leaching of contaminants from the landfill to the groundwater, and prevent surface water run-on and control surface water runoff and erosion. The remedial alternatives evaluated were no action, soil cover, RCRA Subtitle D Cap, and excavation and off-site disposal. Based on the comparative analysis; soil cover with removal of wetland debris, removal of the eastern drainage ditch, and Land Use Controls (LUCs) was recommended as the preferred alternative for Site 4.

Proposed Remedial Action Plan and Record of Decision – 2004

The PRAP for Site 4 identified the preferred alternative for addressing potential contamination at Site 4. A public notice of the meeting and availability of the PRAP was issued on April 29, 2004. The Navy provided a public comment period from May 12 through June 12, 2004. A public meeting to present the PRAP was held on May 17, 2004 at the Major Hillard Library. No significant changes were made to the preferred remedial action alternative identified in the PRAP as a result of the public meeting and comment period. The ROD documenting the Selected Remedy was signed in September 2004.

Remedial Design/Remedial Action – 2004

The RD for the Selected Remedy; soil cover with removal of wetland debris, removal of the eastern drainage ditch, and LUCs; was completed in November 2004. The Work Plan for RA implementation was finalized and construction began in March 2005. Construction is expected to be completed by the end of FY 2005 and will be documented in a Construction Closeout Report.

Upon construction completion, a Remedial Action Completion Report (RACR) will be prepared in order to document the construction completion in accordance with the ROD and maintenance inspections and performance monitoring will be conducted. Additionally, because waste will remain on-site above levels that allow for UU/UE, LUCs will be maintained within the boundaries of the landfill and CERCLA five-year site remedy reviews will be conducted.

3.1.4 Site 5—Burning Grounds

Site 5 is the former Burning Grounds consisting of approximately 24 acres located in the northeastern portion of SJCA. In earlier documents, Site 5 was also referred to as SWMU 8 and was reported to consist of approximately 3 acres. Review of historical aerial photographs indicate that prior to use as a disposal area, the site and much of the adjacent area had been used for placement of dredge spoil material that reportedly originated from Blows Creek and the Southern Branch of the Elizabeth River.

Operations began at the Burning Grounds in the 1930s when waste ordnance materials, including black powder (mixture of charcoal, nitrate, and sulfur), smokeless powder (nitrocellulose), Explosive D (ammonium picrate), and Composition A-3 (contains RDX and wax), were disposed of by open burning on three main pads. Tetryl, trinitrotoluene (TNT), fuzes, solvents, paint sludge, pesticides, and various types of refuse were also disposed of. Reports stated that the Burning Grounds spontaneously caught fire several times in the 1970s. The amount of ordnance disposed of varied from year to year and there is insufficient information to calculate the waste volume. Interviews conducted with former employees in December 2001 indicated that asbestos piping was buried 10 ft below ground surface (bgs) and that other material disposed of included tables and metal from buildings. In 1974, 427 short tons of ordnance items were reportedly disposed of.

The Burning Grounds surface was decontaminated in mid-1977. The decontamination included equipment from buildings that had been filled with oil and straw and ignited at the Burning Grounds. Afterwards, the ground surface was reportedly covered with oil and straw and burned, the top 6 in. of soil was then diced, and the ground surface was covered

with oil and straw and burned again. After the decontamination was completed, the Naval Ammunition Production Engineering Center (NAPEC) collected samples for chemical analyses and certified decontamination; however, the level of decontamination was not specified.

The site currently consists of an open field with the south-central portion overgrown with phragmites. A significant portion of the site's central area is covered with a layer of gravel. The Site 5 topography is generally level, sloping towards Blows Creek. Groundwater flow follows the topography and flows towards Blows Creek. One to three ft deep vegetated drainage ditches are located along the perimeters of the site and discharge surface water runoff to Blows Creek.

Remedial Investigation/Human Health Risk Assessment/Ecological Risk Assessment – 1997 through 2003

The RI field investigation activities included geophysical investigations; monitoring well installation; water-level monitoring; waste delineation; and the collection and analysis of surface and subsurface soil samples, groundwater samples, drainage sediment samples, and drainage surface water samples. Based on the waste delineation investigation conducted, it was determined that the extent of waste was greater than previously identified and the Site 5 boundaries were adjusted to reflect the extent of waste encountered.

The human health and ecological risk assessments conducted as part of the RI concluded that there is potential risk to human and ecological receptors from exposure to chemicals in soil and upland drainage ditch sediment (primarily inorganics and PAHs). Because surface water is transient at the site and the upland ditches provide minimal ecological habitat, there is no significant risk to human health and the environment identified from direct exposure to surface water. Groundwater samples collected from the shallow monitoring wells at Site 5 indicated isolated detections of inorganics at concentrations above maximum contaminant levels (MCLs). In addition, an isolated detection of RDX was found in a sample collected from a deep monitoring well.

The RI recommended additional soil and groundwater sampling to further define the nature and extent of contamination in support of evaluating remedial alternatives for Site 5. Further evaluation of the potential for adverse effects to aquatic life in Blows Creek sediment was also recommended based on chemical concentrations of inorganics and pesticides in upland drainage ditch sediment/soil. A separate BERA for Blows Creek is currently being conducted to identify potential risk associated with possible historical contributions to Blows Creek from upland Navy IR Program sites, including Site 5.

Expanded Remedial Investigation/Human Health Risk Assessment/Ecological Risk Assessment –2003 to Present

An Expanded RI was completed in December 2003 and included the collection and analysis of surface soil samples to fill spatial data gaps, better evaluate areas posing potential ecological risk, and evaluate potential remedial alternatives. Additionally, groundwater samples were collected from the existing monitoring wells to confirm or deny MCL exceedances of inorganics in shallow groundwater and the presence/absence of RDX in deep groundwater identified during the RI.

The results, reevaluation of potential soil risks, and recommendations were submitted in a Draft Expanded RI Report in November 2004. The Expanded RI will be finalized in FY 2005, and will include recommendations for the path forward for Site 5.

3.2 Description of Preliminary Screening Areas (FFA Appendix B)

The sites described in this section have been identified by the FFA as preliminary screening areas. Locations of each screening area are shown on Figure 3-1. Table 3-2 provides a summary of the studies conducted at each site.

3.2.1 Site 19—Building 190

Former Building 190 was located just south of the mouth of Blows Creek at the confluence of the Southern Branch of the Elizabeth River. Building 190 handled loose ordnance materials and was heavily used for loading explosives into ammunition. From the 1940s to the 1970s, Explosive D and Composition A-3 were reportedly used at Building 190.

In mid-1977 all ordnance-handling buildings were decontaminated by flushing with chemical solutions and water. Prior to decontamination, NAPEC visually inspected the facilities and collected samples for chemical analysis to develop appropriate decontamination procedures for each building. At the conclusion of the decontamination process, NAPEC visually reinspected each building, collected samples for chemical analysis, and certified that the facilities were decontaminated. However, the level of decontamination was not specified and residues of ordnance may remain.

The 1989 RFA reported that various ordnance items had been disposed of in the area between Building M-5 and Building 190 during past ordnance management activities. The area was noted to contain a variety of construction rubble and facility personnel reported no knowledge of residual contamination from ordnance management operations.

Building 190 was demolished sometime after 2000 and the site is now a grass-covered field. Two concrete drainage culverts remain on-site, leading underground from former Building 190 to the Southern Branch of the Elizabeth River.

Site Screening Assessment – 2002

As part of the SSA, the unvalidated analytical results from soil and groundwater samples collected during the RRR were used to conduct human health and ecological risk screenings. The SSA concluded that potential human health risks identified in soil and groundwater should be further evaluated. Additionally, concerns were identified regarding the two concrete drainage culverts leading from the former Building 190 towards the Southern Branch of the Elizabeth River.

Site Investigation – 2003

Based on the results of the SSA, an SI was conducted at Site 19 in August 2003. Surface soil, subsurface soil, and sediment samples were collected. Potential human health risks from PAHs and inorganics in soil were identified. The compounds detected in Site 19 sediment were similar to those frequently detected in urban water bodies such as the Elizabeth River

and although these compounds may be in part related to historic site activities, the presence of these chemicals more likely reflects chemical input from a variety of anthropogenic sources, therefore, no further evaluation of sediment was recommended.

The SI recommended further delineation of PAHs and inorganics in soil for potential removal. Additionally, groundwater sampling was recommended to assess the potential impact of the elevated PAHs found in subsurface soil.

Supplemental Site Investigation – 2004 to Present

Based on the SI recommendations, additional soil and groundwater samples were collected in November 2004 and April 2005 as part of a Supplemental SI. A Draft Supplemental SI Report was submitted in June 2005 detailing the path forward for Site 19. Based on the preliminary results, the SJCA IR Partnering Team recommend a soil removal action of two isolated hot spots indicating potential human health risks from inorganics and PAHs.

3.2.2 Site 21—Building 187

Building 187 was a former locomotive shed used for maintenance. A concrete maintenance pit, approximately 40-ft long by 4-ft wide, was located in the floor of the building. Building 187 was demolished in 2003 and the pit was fractured and backfilled.

Site Screening Assessment – 2002

As part of the SSA, the unvalidated analytical results from soil and groundwater samples collected during the RRR were used to conduct human health and ecological risk screenings. Based on the elevated VOC concentrations detected in groundwater and potential human health risks identified, the SSA recommended that Site 21 groundwater be further evaluated. Additionally, low level VOCs were detected at nearby Site 11 (former Building 53), an electrical shop where solvents were reportedly disposed of on the railroad track bed. Therefore, the SSA recommended that future investigations of groundwater at Site 21 encompass former Site 11 due to the proximity of the two sites. No further action was recommended for surface soil or for evaluating potential ecological effects.

Site Investigation – 2003

Based on the results of the SSA, an SI was conducted at Site 21 in August 2003. The SI field activities included a MIP investigation to delineate the vicinity of elevated VOCs, monitoring well installation, and collection of groundwater samples. Potential human health risks were identified from VOCs in shallow groundwater and select inorganics and RDX in deep groundwater. The SI recommended further evaluation of VOCs in shallow groundwater through the installation and sampling of side- and down-gradient shallow monitoring wells and resampling of select existing monitoring wells to confirm or deny elevated concentrations of inorganics and RDX.

Supplemental Site Investigation – 2004 to Present

Based on the SI recommendations, additional monitoring wells were installed and groundwater samples were collected in November 2004 as part of a Supplemental SI. The preliminary results indicate that data gaps still exist in delineation of the VOCs in shallow groundwater to the east and under the adjacent building to the west. A Draft Tech Memo Work Plan for Additional Groundwater Delineation at Site 21 was submitted in July 2005

with the further delineation planned for summer FY 2005 The results will be included in a Supplemental SI Report in FY 2006.

3.3 Sites Requiring NFA (FFA Appendix C)

Forty-seven sites at SJCA have been considered NFA by the SJCA IR Partnering Team following desktop audits and/or site investigations. These sites are listed in Table 3-1 as NFA sites and are shown on Figure 3-2.

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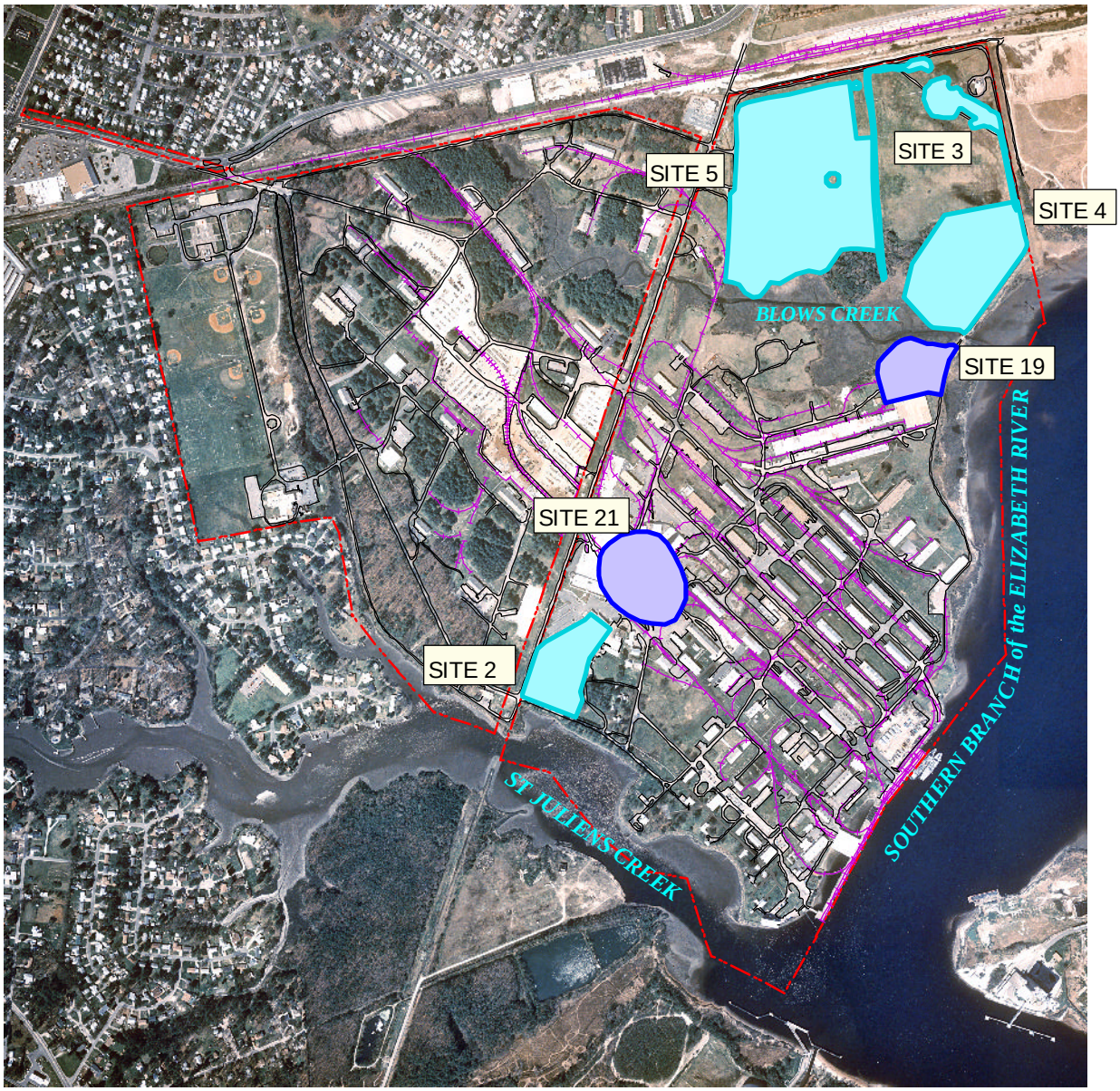

LEGEND

- Sites in the CERCLA RI/FS Process
- Preliminary Screening Areas (FFA Appendix B)

N

0 500 1000 1500 Feet

Figure 3-1
Further Action Sites Location Map
St. Juliens Creek Annex
Chesapeake, Virginia

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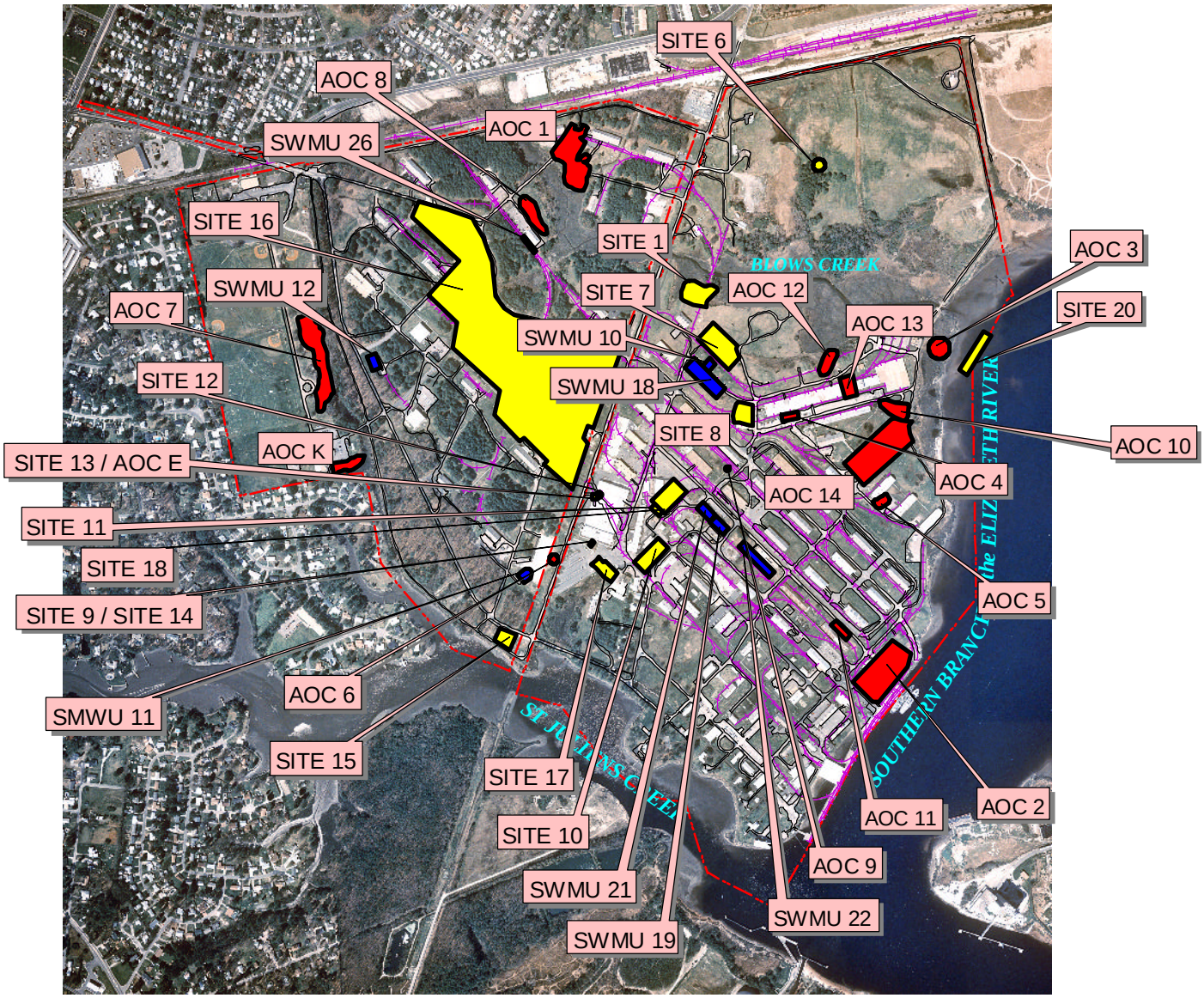


LEGEND

- AOCs
- Sites
- SWMUs

N

0 500 1000 1500 Feet

Figure 3-2
No Further Action Sites, SWMUs, and AOCs Location Map
St. Juliens Creek Annex
Chesapeake, Virginia

SECTION 4

Proposed Activities for FYs 2006 through 2010

This section summarizes ongoing and planned IR/CERCLA activities at each site, focusing on activities that are proposed for FYs 2006 through 2010. The conceptual project schedule is presented in Figure 4-1. The review and comment periods were based on FFA guidelines and flow charts depicting the process are included as Figures 4-2 through 4-4. The schedules derived from these guidelines assume informal dispute recognition.

4.1 Site Characterization and Remediation Activities

4.1.1 SJCA Facility-Wide

- Community Involvement Plan Update
- BERA for Blows Creek
- Annual SMP Update
- Administrative Record Updates as necessary
- IR Web Site updates as necessary
- Desktop Geographical Information System (GIS) updates as necessary
- Revisions to Master Project Plans as necessary

4.1.2 Site 2—Waste Disposal Area B

- Expanded RI Report
- Pilot Study/Treatability Study
- FS
- PRAP and ROD
- RD
- RACR

4.1.3 Site 4—Landfill D

- Construction Closeout Report
- RACR
- Maintenance Inspections and Performance Monitoring
- CERCLA Five-Year Site Remedy Review

4.1.4 Site 5—Burning Grounds

- Expanded RI Report
- EE/CA and Action Memorandum
- NTCRA
- FS
- PRAP and ROD
- RD

4.1.5 Site 19—Building 190

- Supplemental SI Report
- EE/CA and Action Memorandum
- NTCRA
- Closeout Report

4.1.6 Site 21—Building 187

- Supplemental SI Report
- Pilot Study/Treatability Study
- Closeout Report or Further Investigation

Additional activities may be identified during or as a result of the execution of the activities described herein.

4.2 Proposed Removal Actions and Remedial Actions

Site-specific remedial and removal actions conducted to-date at SJCA are discussed in the site descriptions presented in Section 3 of this SMP. Proposed removal and remedial actions for FYs 2005 through 2006 at SJCA are presented below.

4.2.1 Site 2— Waste Disposal Area B

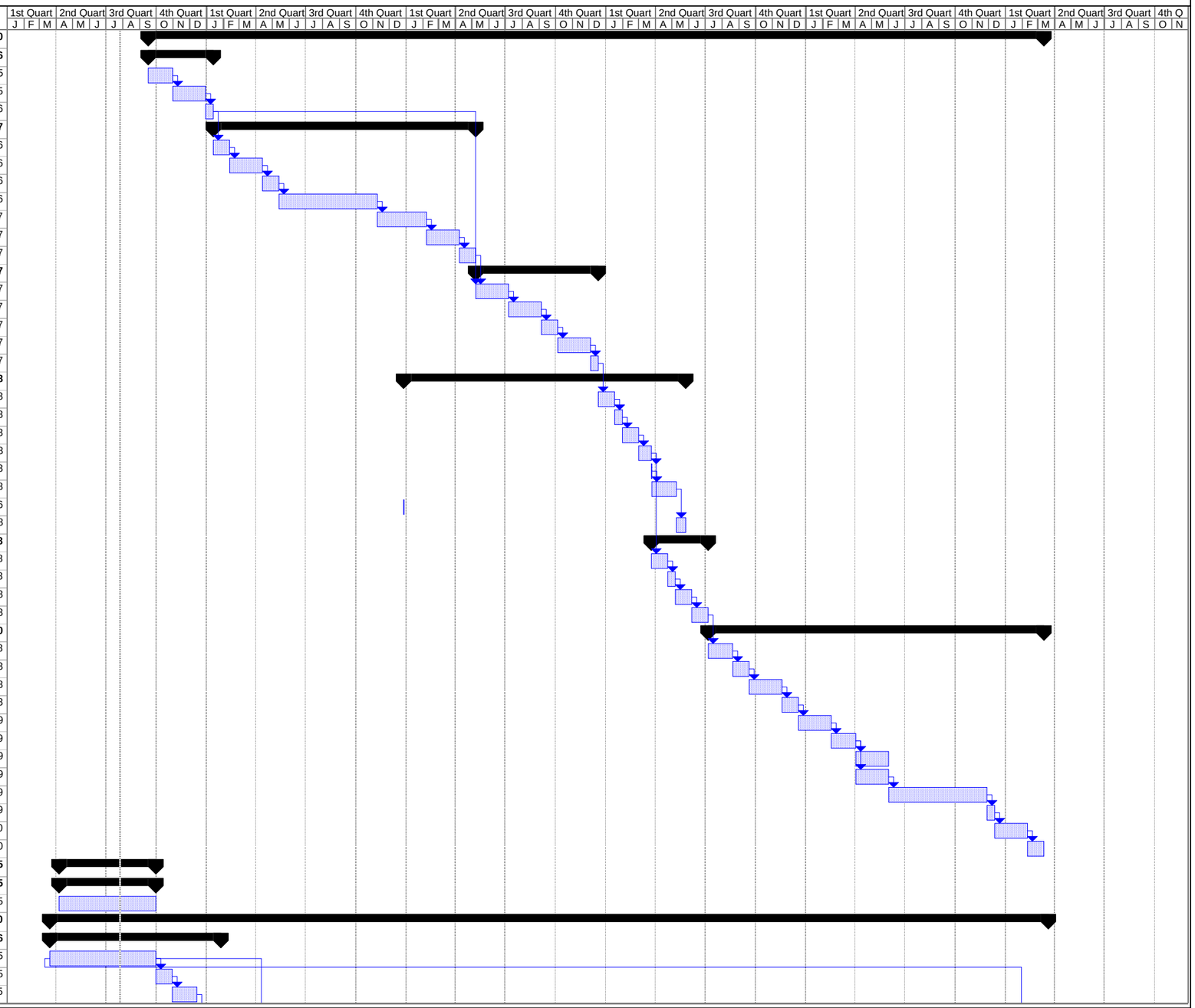
Remedial activities are planned for Site 2 in a phased approach beginning in FY 2006, based on funding. Remedial options for Site 2 are currently being reviewed by the SJCA Partnering Team.

4.2.2 Site 19—Building 190

A NTCRA to remove two soil hot spots, based on elevated concentrations of inorganics and PAHs, is planned for implementation at Site 19 in FY 2006. An EE/CA will be prepared to evaluate the removal action alternatives and potential costs based on the volume and type of material for removal.

Figure 4-1
Schedule of IR Activities for Fiscal Years 2006 through 2010
St Juliens Creek Annex
Site Management Plan

ID	Task Name	Duration	Start	Finish
1	**Site 2 - Waste Disposal Area B**	**1638 days**	**Sat 9/17/05**	**Fri 3/12/10**
2	**Expanded Remedial Investigation Report**	**119 days**	**Sat 9/17/05**	**Fri 1/13/06**
3	Draft Expanded RI Report	45 days	Sat 9/17/05	Mon 10/31/05
4	Regulatory/Navy Review of Draft Expanded RI Report	60 days	Tue 11/1/05	Fri 12/30/05
5	RTC and Final Expanded RI Report	14 days	Sat 12/31/05	Fri 1/13/06
6	**Site 2 Pilot Study or Treatability Study**	**480 days**	**Sat 1/14/06**	**Tue 5/8/07**
7	Draft Work Plan	30 days	Sat 1/14/06	Sun 2/12/06
8	Regulatory/Navy Review of Draft Work Plan	60 days	Mon 2/13/06	Thu 4/13/06
9	RTC and Final Work Plan	30 days	Fri 4/14/06	Sat 5/13/06
10	Treatability Study	180 days	Sun 5/14/06	Thu 11/9/06
11	Draft Report	90 days	Fri 11/10/06	Wed 2/7/07
12	Regulatory/Navy Review of Draft Report	60 days	Thu 2/8/07	Sun 4/8/07
13	RTC and Final Report	30 days	Mon 4/9/07	Tue 5/8/07
14	**Feasibility Study**	**224 days**	**Wed 5/9/07**	**Tue 12/18/07**
15	Draft FS	60 days	Wed 5/9/07	Sat 7/7/07
16	Regulatory/Navy Review of Draft FS	60 days	Sun 7/8/07	Wed 9/5/07
17	RTC and Draft Final FS	30 days	Thu 9/6/07	Fri 10/5/07
18	Regulatory/Navy Review of Draft Final FS	60 days	Sat 10/6/07	Tue 12/4/07
19	RTC and Final FS	14 days	Wed 12/5/07	Tue 12/18/07
20	**PRAP**	**516 days**	**Thu 12/28/06**	**Mon 5/26/08**
21	Draft PRAP	30 days	Wed 12/19/07	Thu 1/17/08
22	Navy Review of Draft PRAP	14 days	Fri 1/18/08	Thu 1/31/08
23	Regulatory Review of Draft Prap	30 days	Fri 2/1/08	Sat 3/1/08
24	Draft Final PRAP	23 days	Sun 3/2/08	Mon 3/24/08
25	Public Notice (for Draft Final PRAP)	1 day	Tue 3/25/08	Tue 3/25/08
26	**Public Comment Period (required 45 days)**	45 days	Wed 3/26/08	Fri 5/9/08
27	**Public Meeting**	1 day	Thu 12/28/06	Thu 12/28/06
28	RTC and Final PRAP	17 days	Sat 5/10/08	Mon 5/26/08
29	**Record of Decision**	**104 days**	**Tue 3/25/08**	**Sun 7/6/08**
30	Draft ROD	30 days	Tue 3/25/08	Wed 4/23/08
31	Navy Review of Draft ROD	14 days	Thu 4/24/08	Wed 5/7/08
32	Regulatory/Navy Review of Draft ROD	30 days	Thu 5/8/08	Fri 6/6/08
33	RTC and Final ROD	30 days	Sat 6/7/08	Sun 7/6/08
34	**Remedial Design**	**614 days**	**Mon 7/7/08**	**Fri 3/12/10**
35	Draft Basis of Design	45 days	Mon 7/7/08	Wed 8/20/08
36	Regulatory/Navy Review of Draft Basis of Design	30 days	Thu 8/21/08	Fri 9/19/08
37	Preliminary Design (35%)	60 days	Sat 9/20/08	Tue 11/18/08
38	Regulatory/Navy Review of Preliminary Design	30 days	Wed 11/19/08	Thu 12/18/08
39	Pre-Final Design (90%)	60 days	Fri 12/19/08	Mon 2/16/09
40	Regulatory/Navy Review of Pre-final Design	45 days	Tue 2/17/09	Thu 4/2/09
41	Final Basis of Design	60 days	Fri 4/3/09	Mon 6/1/09
42	Final Design (100%)	60 days	Fri 4/3/09	Mon 6/1/09
43	Design Implementation	180 days	Tue 6/2/09	Sat 11/28/09
44	Draft Remedial Action Completion Report	14 days	Sun 11/29/09	Sat 12/12/09
45	Regulatory/Navy Review of Pre-final Design	60 days	Sun 12/13/09	Wed 2/10/10
46	Final Remedial Action Completion Report	30 days	Thu 2/11/10	Fri 3/12/10
47	**Site 3 - Waste Disposal Area C**	**177 days**	**Thu 4/7/05**	**Fri 9/30/05**
48	**Record of Decision**	**177 days**	**Thu 4/7/05**	**Fri 9/30/05**
49	Final NFA ROD (Signature)	177 days	Thu 4/7/05	Fri 9/30/05
50	**Site 4 - Landfill D**	**1826 days?**	**Mon 3/21/05**	**Sat 3/20/10**
51	**Remedial Design**	**313 days?**	**Mon 3/21/05**	**Fri 1/27/06**
52	Design Implementation	194 days	Mon 3/21/05	Fri 9/30/05
53	Draft Construction Closeout Report	30 days	Sat 10/1/05	Sun 10/30/05
54	Regulatory/Navy Review of Draft Construction Closeout Report	45 days?	Mon 10/31/05	Wed 12/14/05



Date: Tue 7/26/05

Task | Progress | Summary | External Tasks | External Milestone | Deadline
Split | Milestone | Project Summary | External Milestone | External Milestone

Note: The review and submittal dates are based on the FFA Process Flow Charts or dates previously agreed upon and assume informal dispute resolution of Draft Final documents within a reasonable number of days.

Figure 4-1
Schedule of IR Activities for Fiscal Years 2006 through 2010
St Juliens Creek Annex
Site Management Plan

ID	Task Name	Duration	Start	Finish
55	Final Construction Closeout Report	14 days?	Thu 12/15/05	Wed 12/28/05
56	Survey Plat	30 days?	Thu 12/29/05	Fri 1/27/06
57	**Inspection and Performance Monitoring**	**469 days**	**Thu 12/29/05**	**Wed 4/11/07**
58	Draft Maintenance and Performance Monitoring Plan	30 days	Thu 12/29/05	Fri 1/27/06
59	Regulatory/Navy Review of Draft Inspection and Performance Monitoring Plan	60 days	Sat 1/28/06	Tue 3/28/06
60	RTC and Final Inspection and Performance Monitoring Plan	14 days	Wed 3/29/06	Tue 4/11/06
61	Performance Monitoring	365 days	Wed 4/12/06	Wed 4/11/07
62	**Remedial Action Completion Report**	**134 days**	**Thu 4/12/07**	**Thu 8/23/07**
63	Draft Remedial Action Completion Report	60 days	Thu 4/12/07	Sun 6/10/07
64	Regulatory/Navy Review of Remedial Action Completion Report	60 days	Mon 6/11/07	Thu 8/9/07
65	RTC and Final Remedial Action Completion Report	14 days	Fri 8/10/07	Thu 8/23/07
66	**Five-Year Review**	**97 days**	**Mon 12/14/09**	**Sat 3/20/10**
67	Draft Five-Year Review Report	30 days	Mon 12/14/09	Tue 1/12/10
68	Regulatory/Navy Review of Five-Year Review Report	60 days	Wed 1/13/10	Sat 3/13/10
69	RTC and Final Five-Year Review Report	7 days	Sun 3/14/10	Sat 3/20/10
70	**Site 5 - Burning Grounds**	**1537 days**	**Tue 11/1/05**	**Fri 1/15/10**
71	**EE/CA, Action Memorandum, and Interim Remedial Action**	**449 days**	**Tue 11/1/05**	**Tue 1/23/07**
72	Draft EE/CA	60 days	Tue 11/1/05	Fri 12/30/05
73	Regulatory/Navy Review of Draft EE/CA	60 days	Sat 12/31/05	Tue 2/28/06
74	Public Comment Period (required 45 days)	45 days	Wed 3/1/06	Fri 4/14/06
75	RTC and Final EE/CA	30 days	Sat 4/15/06	Sun 5/14/06
76	Draft Action Memorandum	30 days	Mon 5/15/06	Tue 6/13/06
77	Regulatory/Navy Review of Draft Action Memorandum	30 days	Wed 6/14/06	Thu 7/13/06
78	RTC and Final Action Memorandum	14 days	Fri 7/14/06	Thu 7/27/06
79	Interim Remedial Action Implementation	180 days	Fri 7/28/06	Tue 1/23/07
80	**Feasibility Study**	**224 days**	**Wed 1/24/07**	**Tue 9/4/07**
81	Draft FS	60 days	Wed 1/24/07	Sat 3/24/07
82	Regulatory/Navy Review of Draft FS	60 days	Sun 3/25/07	Wed 5/23/07
83	RTC and Draft Final FS	30 days	Thu 5/24/07	Fri 6/22/07
84	Regulatory/Navy Review of Draft Final FS	60 days	Sat 6/23/07	Tue 8/21/07
85	RTC and Final FS	14 days	Wed 8/22/07	Tue 9/4/07
86	**PRAP**	**146 days**	**Wed 9/5/07**	**Mon 1/28/08**
87	Draft PRAP	30 days	Wed 9/5/07	Thu 10/4/07
88	Navy Review of Draft PRAP	14 days	Fri 10/5/07	Thu 10/18/07
89	Regulatory Review of Draft Prap	30 days	Fri 10/19/07	Sat 11/17/07
90	Draft Final PRAP	20 days	Sun 11/18/07	Fri 12/7/07
91	Public Notice (for Draft Final PRAP)	1 day	Sat 12/8/07	Sat 12/8/07
92	**Public Comment Period (required 45 days)**	45 days	Sun 12/9/07	Tue 1/22/08
93	**Public Meeting**	1 day	Fri 1/4/08	Fri 1/4/08
94	RTC and Final PRAP	6 days	Wed 1/23/08	Mon 1/28/08
95	**Record of Decision**	**104 days**	**Tue 1/29/08**	**Sun 5/11/08**
96	Draft ROD	30 days	Tue 1/29/08	Wed 2/27/08
97	Navy Review of Draft ROD	14 days	Thu 2/28/08	Wed 3/12/08
98	Regulatory/Navy Review of Draft ROD	30 days	Thu 3/13/08	Fri 4/11/08
99	RTC and Final ROD	30 days	Sat 4/12/08	Sun 5/11/08
100	**Remedial Design**	**614 days**	**Mon 5/12/08**	**Fri 1/15/10**
101	Draft Basis of Design	45 days	Mon 5/12/08	Wed 6/25/08
102	Regulatory/Navy Review of Draft Basis of Design	30 days	Thu 6/26/08	Fri 7/25/08
103	Preliminary Design (35%)	60 days	Sat 7/26/08	Tue 9/23/08
104	Regulatory/Navy Review of Preliminary Design	30 days	Wed 9/24/08	Thu 10/23/08
105	Pre-Final Design (90%)	60 days	Fri 10/24/08	Mon 12/22/08
106	Regulatory/Navy Review of Pre-final Design	45 days	Tue 12/23/08	Thu 2/5/09
107	Final Basis of Design	60 days	Fri 2/6/09	Mon 4/6/09
108	Final Design (100%)	60 days	Fri 2/6/09	Mon 4/6/09

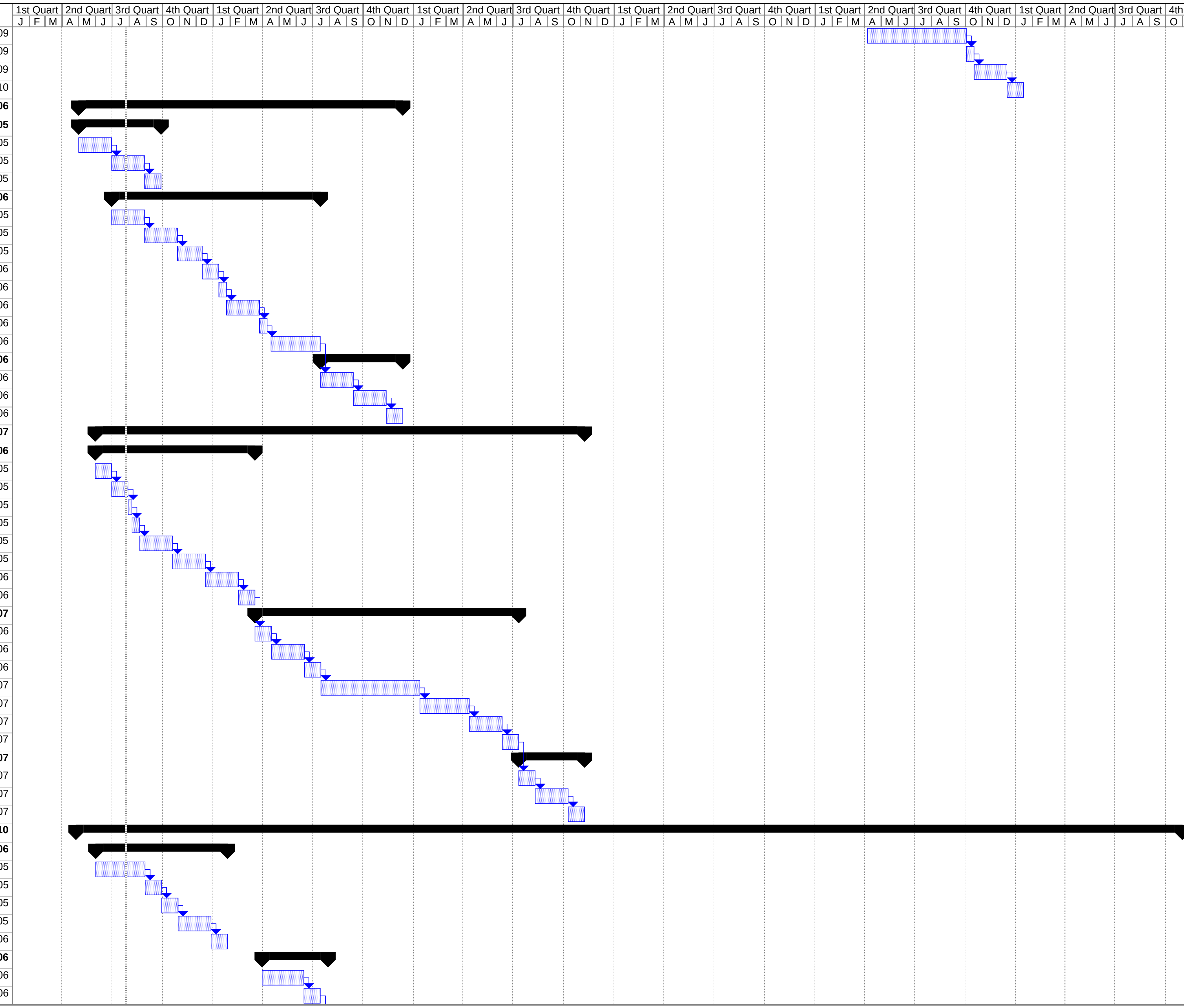
Date: Tue 7/26/05

Task | Progress | Summary | External Tasks | External Milestone | Deadline
Split | Milestone | Project Summary | External Milestone | External Milestone

Note: The review and submittal dates are based on the FFA Process Flow Charts or dates previously agreed upon and assume informal dispute resolution of Draft Final documents within a reasonable number of days.

Figure 4-1
Schedule of IR Activities for Fiscal Years 2006 through 2010
St Juliens Creek Annex
Site Management Plan

ID	Task Name	Duration	Start	Finish
109	Design Implementation	180 days	Tue 4/7/09	Sat 10/3/09
110	Draft Remedial Action Completion Report	14 days	Sun 10/4/09	Sat 10/17/09
111	Regulatory/Navy Review of Pre-final Design	60 days	Sun 10/18/09	Wed 12/16/09
112	Final Remedial Action Completion Report	30 days	Thu 12/17/09	Fri 1/15/10
113	**Site 19 - Building 190**	**590 days**	**Mon 5/2/05**	**Tue 12/12/06**
114	**Supplemental SI at Site 19**	**150 days**	**Mon 5/2/05**	**Wed 9/28/05**
115	Draft SSI Report	60 days	Mon 5/2/05	Thu 6/30/05
116	Regulatory/Navy Review of Draft SSI Report	60 days	Fri 7/1/05	Mon 8/29/05
117	RTC and Final SSI Report	30 days	Tue 8/30/05	Wed 9/28/05
118	**EE/CA, Action Memorandum, and NTCRA for Site 19**	**380 days**	**Fri 7/1/05**	**Sat 7/15/06**
119	Draft EE/CA	60 days	Fri 7/1/05	Mon 8/29/05
120	Regulatory/Navy Review of Draft EE/CA	60 days	Tue 8/30/05	Fri 10/28/05
121	**Public Comment Period (required 45 days)**	45 days	Sat 10/29/05	Mon 12/12/05
122	RTC and Final EE/CA	30 days	Tue 12/13/05	Wed 1/11/06
123	Draft Action Memorandum	14 days	Thu 1/12/06	Wed 1/25/06
124	Regulatory/Navy Review of Draft Action Memorandum	60 days	Thu 1/26/06	Sun 3/26/06
125	RTC and Final Action Memorandum	14 days	Mon 3/27/06	Sun 4/9/06
126	NTCRA	90 days	Mon 4/17/06	Sat 7/15/06
127	**Closeout Report for Site 19**	**150 days**	**Sun 7/16/06**	**Tue 12/12/06**
128	Draft Closeout Report	60 days	Sun 7/16/06	Wed 9/13/06
129	Regulatory/Navy Review of Draft Closeout Report	60 days	Thu 9/14/06	Sun 11/12/06
130	RTC and Final Closeout Report	30 days	Mon 11/13/06	Tue 12/12/06
131	**Site 21 - Building 187**	**891 days**	**Wed 6/1/05**	**Thu 11/8/07**
132	**Supplemental SI at Site 21**	**291 days**	**Wed 6/1/05**	**Sat 3/18/06**
133	Draft Tech Memo Work Plan	30 days	Wed 6/1/05	Thu 6/30/05
134	Regulatory/Navy Review of Draft Tech Memo Work Plan	30 days	Fri 7/1/05	Sat 7/30/05
135	Final Tech Memo Work Plan	7 days	Sun 7/31/05	Sat 8/6/05
136	Field Investigation	14 days	Sun 8/7/05	Sat 8/20/05
137	Data Evaluation	60 days	Sun 8/21/05	Wed 10/19/05
138	Draft Report	60 days	Thu 10/20/05	Sun 12/18/05
139	Regulatory/Navy Review of Draft Report	60 days	Mon 12/19/05	Thu 2/16/06
140	RTC and Final Report	30 days	Fri 2/17/06	Sat 3/18/06
141	**Site 21 Pilot Study or Treatability Study**	**480 days**	**Sun 3/19/06**	**Wed 7/11/07**
142	Draft Work Plan	30 days	Sun 3/19/06	Mon 4/17/06
143	Regulatory/Navy Review of Draft Work Plan	60 days	Tue 4/18/06	Fri 6/16/06
144	RTC and Final Work Plan	30 days	Sat 6/17/06	Sun 7/16/06
145	Treatability Study	180 days	Mon 7/17/06	Fri 1/12/07
146	Draft Report	90 days	Sat 1/13/07	Thu 4/12/07
147	Regulatory/Navy Review of Draft Report	60 days	Fri 4/13/07	Mon 6/11/07
148	RTC and Final Report	30 days	Tue 6/12/07	Wed 7/11/07
149	**NFA Closeout Report or Further Investigation**	**120 days**	**Thu 7/12/07**	**Thu 11/8/07**
150	Draft Report	30 days	Thu 7/12/07	Fri 8/10/07
151	Regulatory/Navy Review of Draft Report	60 days	Sat 8/11/07	Tue 10/9/07
152	RTC and Final Report	30 days	Wed 10/10/07	Thu 11/8/07
153	**SJCA Facility-Wide**	**2014 days**	**Wed 4/27/05**	**Sun 10/31/10**
154	**Blows Creek BERA**	**240 days**	**Thu 6/2/05**	**Fri 1/27/06**
155	Draft Report	90 days	Thu 6/2/05	Tue 8/30/05
156	Navy Review of Draft Report	30 days	Wed 8/31/05	Thu 9/29/05
157	Draft Final Report	30 days	Fri 9/30/05	Sat 10/29/05
158	Regulatory/Navy Review of Draft Final Report	60 days	Sun 10/30/05	Wed 12/28/05
159	RTC and Final Report	30 days	Thu 12/29/05	Fri 1/27/06
160	**SMP FY 2007 - 2011**	**120 days**	**Sat 4/1/06**	**Sat 7/29/06**
161	Draft SMP Update	76 days	Sat 4/1/06	Thu 6/15/06
162	Regulatory/Navy Review of Draft SMP	30 days	Fri 6/16/06	Sat 7/15/06



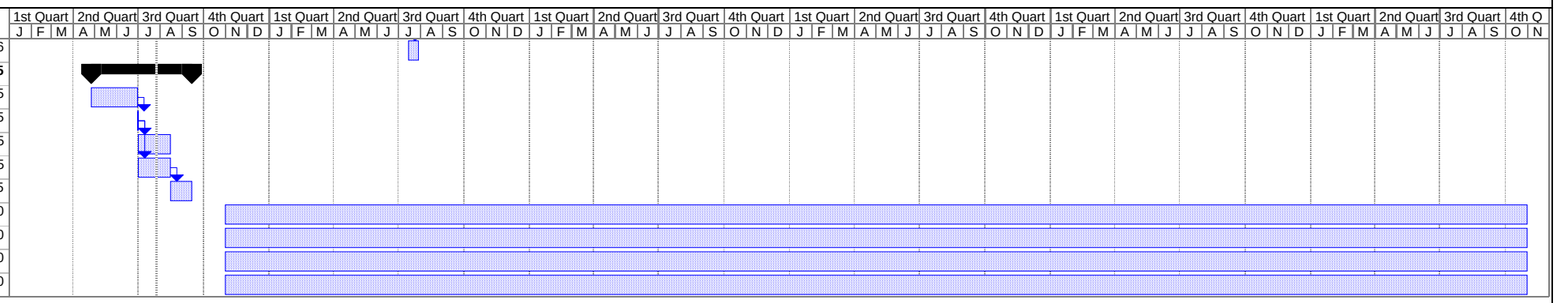
Date: Tue 7/26/05

Task | Split | Progress | Milestone | Summary | Project Summary | External Tasks | External Milestone | External Milestone | External Milestone | Deadline

Note: The review and submittal dates are based on the FFA Process Flow Charts or dates previously agreed upon and assume informal dispute resolution of Draft Final documents within a reasonable number of days.

Figure 4-1
Schedule of IR Activities for Fiscal Years 2006 through 2010
St Juliens Creek Annex
Site Management Plan

ID	Task Name	Duration	Start	Finish
163	RTC and Final SMP	14 days	Sun 7/16/06	Sat 7/29/06
164	**Community Involvement Plan**	**141 days**	**Wed 4/27/05**	**Wed 9/14/05**
165	Draft Community Involvement Plan	65 days	Wed 4/27/05	Thu 6/30/05
166	Public Notice (for Draft Final Community Involvement Plan)	1 day	Fri 7/1/05	Fri 7/1/05
167	Regulatory/Navy Review of Draft Community Involvement Plan	45 days	Sat 7/2/05	Mon 8/15/05
168	**Public Comment Period (required 45 days)**	45 days	Sat 7/2/05	Mon 8/15/05
169	RTC and Final Community Involvement Plan	30 days	Tue 8/16/05	Wed 9/14/05
170	**Administrative Record (Update as needed)**	1826 days	Tue 11/1/05	Sun 10/31/10
171	**GIS (Update as needed)**	1826 days	Tue 11/1/05	Sun 10/31/10
172	**IR Website (Update as needed)**	1826 days	Tue 11/1/05	Sun 10/31/10
173	**Master Project Plans (Update as needed)**	1826 days	Tue 11/1/05	Sun 10/31/10

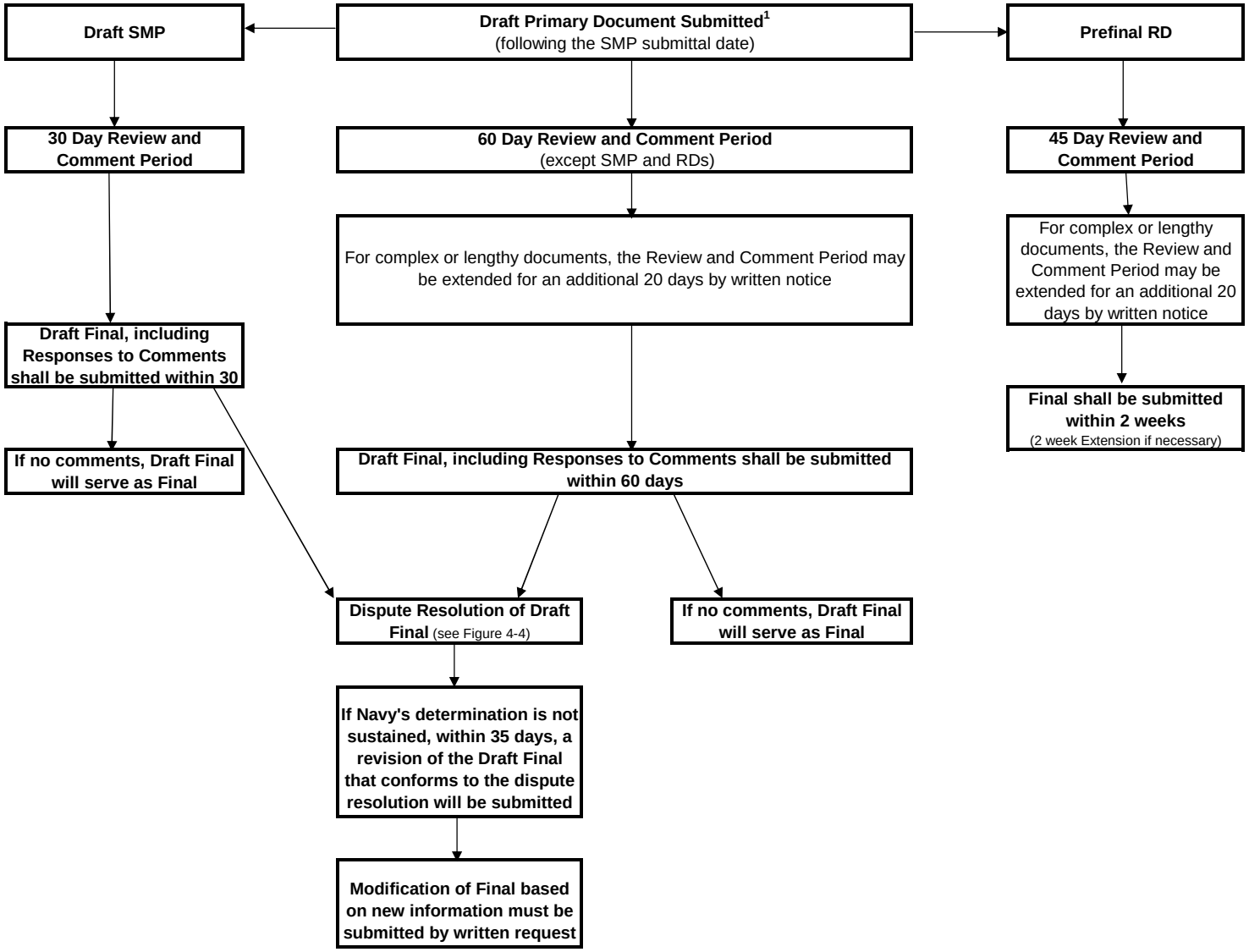


Date: Tue 7/26/05

Task | Progress | Summary | External Tasks | External Milestone | Deadline
Split | Milestone | Project Summary | External Milestone | External Milestone

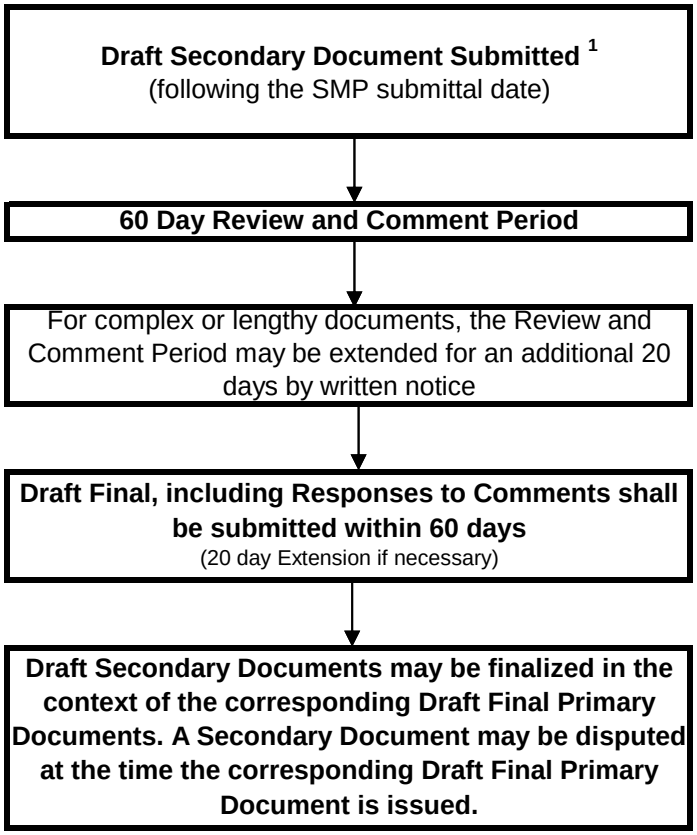
Note: The review and submittal dates are based on the FFA Process Flow Charts or dates previously agreed upon and assume informal dispute resolution of Draft Final documents within a reasonable number of days.

Figure 4-2
Primary Document Submittal Flow Chart
FFA Process
St. Juliens Creek Annex
Chesapeake, Virginia



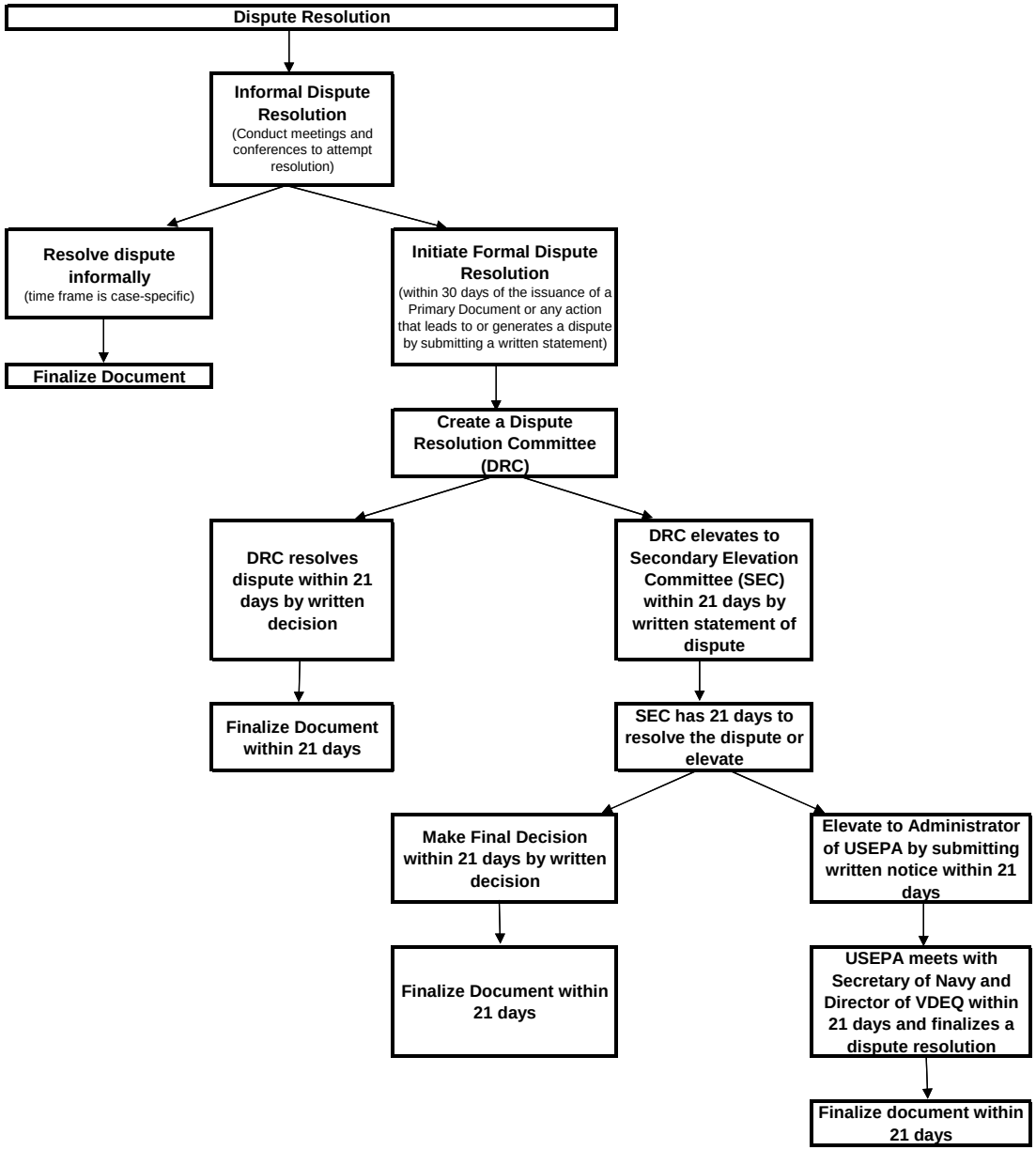
[1]SJCA Primary Documents Include: Remedial Investigation (RI)/Feasibility Study (FS)/Focused Feasibility Study (FFS) Work Plans, RI Reports, FS and FFS Reports, Proposed Remedial Action Plans (PRAPs), Records of Decision (RODs), Final Remedial Designs (RDs), Remedial Action Work Plans, Remedial Action Completion Reports (RACRs), and Site Management Plans (SMPs)

Figure 4-3
Secondary Document Submittal Flow Chart
FFA Process
St. Juliens Creek Annex
Chesapeake, Virginia



[1]SJCA Secondary Documents Include: Health and Safety Plans (HSPs), Non-Time-Critical Removal Action (NTCRA) Plans, Pilot/Treatability Study Work Plans and Reports, Engineering Evaluation/Cost Analysis (EE/CA) Reports, Well Closure Methods and Procedures, Preliminary/Conceptual Designs or equivalents, Prefinal Remedial Designs (RDs), Periodic Reviews/5-Year Review Assessment Reports, Removal Action Memorandums, Preliminary Closeout Reports (PCORs)/Final Closeout Reports (FCORs)

Figure 4-4
Dispute Resolution Flow Chart
FFA Process
St. Juliens Creek Annex
Chesapeake, Virginia



SECTION 5

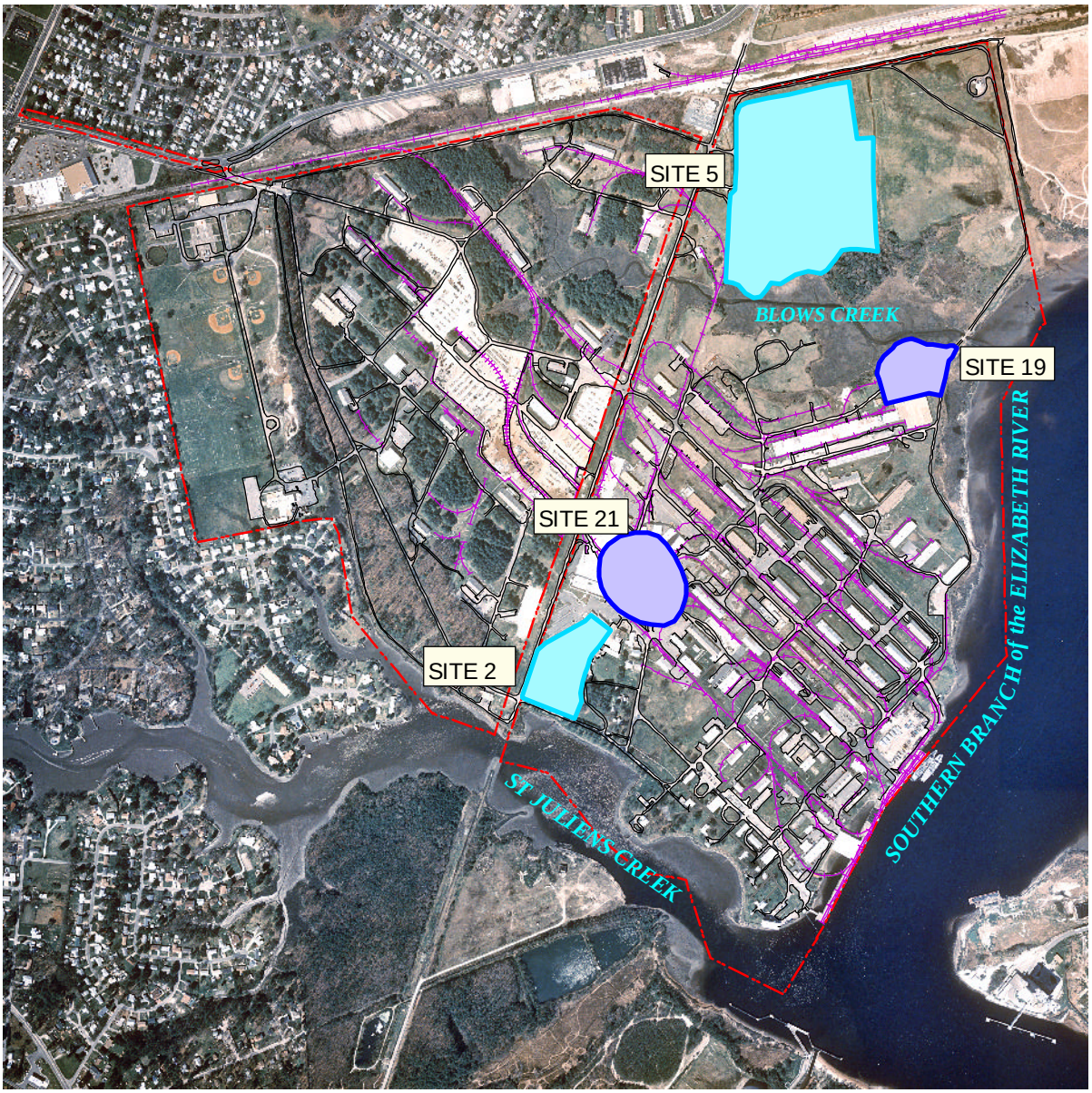
Navy Land Use Planning

The SJCA IR Program has developed a GIS that identifies all areas of past or present environmental concern. The attached CD provides maps and GIS layers in Arcview® for the IR Program sites and potential environmental impact areas, including the extent of groundwater and soil contamination. This information will be made available to facility planning personnel for environmental considerations during operational planning and decision-making. In the future, when LUCs are part of the remedy for IR sites (i.e., Site 4-Landfill D), LUC information will be provided on the attached CD and to facility planning personnel to ensure that LUCs are maintained.

In the event DoD activities will influence the areas outlined or highlighted on the CD, the NAVFAC Regional Project Manager should be consulted:

Mr. Robert G. Schirmer, P.E.
NAVFAC MID LANT
Environmental Code EV3, Bldg N-26, Rm 3208
9742 Maryland Avenue
Norfolk, Virginia 23511-3095
(757) 444-2911

File Path: v:\18gis\st-juliens\figures\stjuliens_figures.apr



LEGEND

- Sites in the CERCLA RI/FS Process
- Preliminary Screening Areas (FFA Appendix B)

N

0 500 1000 1500 Feet

Further Action Sites
Installation Restoration Program
St. Juliens Creek Annex
Chesapeake, Virginia

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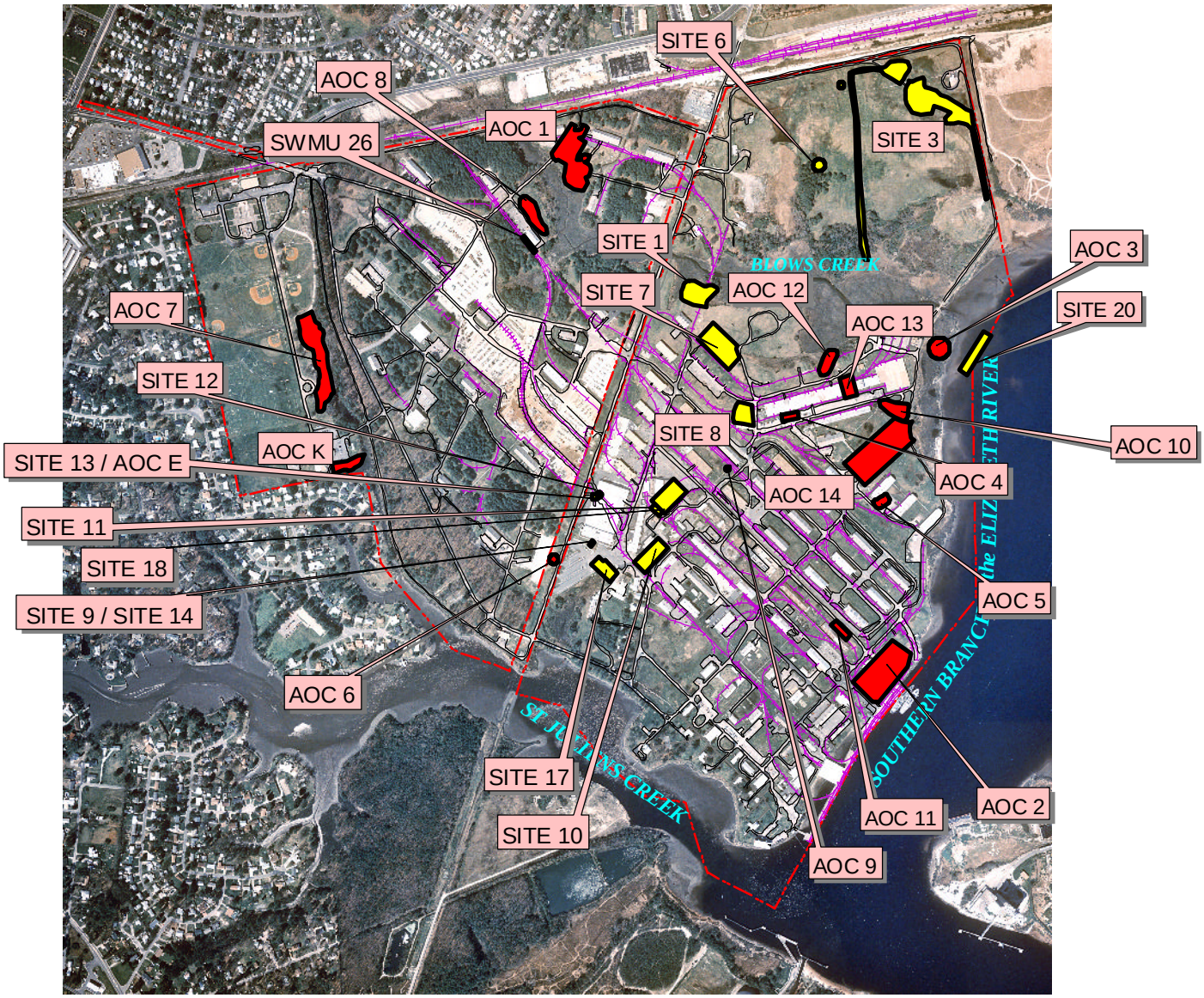

LEGEND

- AOCs
- Sites
- SWMUs

N

0 500 1000 1500 Feet

No Further Action Sites
Installation Restoration Program
St. Juliens Creek Annex
Chesapeake, Virginia

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LEGEND

Restricted Use - Groundwater

N

0 700 1400 Feet

Restricted Use - Groundwater
Installation Restoration Program
St. Juliens Creek Annex
Chesapeake, Virginia

CH2MHILL

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LEGEND

Restricted Use - Soil

N

0 700 1400 Feet

Restricted Use - Soil
Installation Restoration Program
St. Juliens Creek Annex
Chesapeake, Virginia

CH2MHILL

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LEGEND

Restricted Use - Potential UXO

N

0 700 1400 Feet

Restricted Use - Potential UXO
Installation Restoration Program
St. Juliens Creek Annex
Chesapeake, Virginia

CH2MHILL

SECTION 6

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